THE BUILDER

A RECORD OF ARCHITECTURE AND CONSTRUCTION.

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BORDEAUX.

THAT Bordeaux is a place which not only pleasantly impresses the visitor, but is also comfortable and convenient to live in, there can be no doubt. From the moment that one first comes into full view of the city, approaching it either by the river or from the east, one cannot fail to be struck by the appearance that it presents of dignity and elegance, of order and prosperity. Its situation on a sweeping curve of the broad Garonne endows it with a great natural advantage; and the shipping, the wide quays, the level lines of the houses, all more or less similar in style, the many-arched bridge, and the towers of the city rising up behind, all combine in an effect which few cities can excel.

The water front, indeed, is the city's chief glory; but that is not to say that when one enters the streets the charm of the first view gives way to disappointment. The lay-out is frankly in the "grand manner," but there is nothing mechanical or dull about it. It is a pleasure to promenade the streets; for they have an air always of going somewhere, and not, as is so common in our country, of trying their hardest to avoid something. They go, as it were, at an easy gait, straight for their object, generally some worthy place, whence other streets diverge at interesting angles. In some cases they are lined with trees, which make them additionally attractive. The buildings, too, upon either hand, neither obtrude to display their individual excellences nor weary by their dullness. They are uniform in height. They are homogeneous in style. All have architectural merit, and some possess it in high degree.

Now, this smoothness of appearance is specially remarkable when it is remembered that Bordeaux is by no means a modern city. Of importance even in the time of the Romans, as the fragment of an amphitheatre which still stands will testify, it continued in prosperity in the Middle Ages under the influence of the English kings. From the middle of the fifteenth until the eighteenth century was a period of trouble. The loss of trade with England and the Netherlands which followed the passing from Angevin rule to that of the House of Valois was, naturally enough, resented; while with the rise of Protestantism in the sixteenth century was inaugurated an era of turmoil and persecution that was to last for several generations.

Yet with all its history it is not seared and stamped with the marks of time like so many other mediæval cities of one's acquaintance. The Bordeaux that we see to-day is essentially a creation of the eighteenth century; and, though it still contains many evidences of the Middle Ages, they consist chiefly of churches and a couple of gateways and seem somehow to have taken their right places in the modern city without offence to its symmetry.

The transformation of the city was begun about the year 1720. This was a few years after Louis XV. came to the throne, a reign, indeed, during which a remarkable development of civic architecture and town planning took place all over France. Before this date, as a matter of fact, one street improvement, the laying-out of the Cours d'Albret, had been actually begun, but did not progress very far, for under the *régime* of Louis XIV. the care of the fortifications of the old Château Trompette, a fortress just outside the walls and used to curb the unruliness of the Bordelais, was deemed of far more importance than the architectural amenities of the place.

But when the first Intendant (that is, lord-lieutenant) of the new reign, Boucher, came to the city he was seized with the ambition of making it worthy of its fine situation on the river bank. And whether or not it was single-minded zeal for the good of the city that so inspired him, he certainly did initiate its first piece of architecture in the grand manner. This was the work of Jacques Jules Gabriel, who about the year 1730 designed the Hôtel de la Bourse and the Hôtel des Fermes (now the Douane), which, together with other less important buildings, were combined in a symmetrical composition forming an open Place facing the river. In the centre was placed an equestrian statue of Louis XV., which disappeared during the Revolution; and it is interesting to note, as M. Léon Deshairs points out in his monograph upon the city, that this was the first "Place Louis XV." that was made, those of Rennes, Nancy, Paris, Reims, and Rouen all being later in date.

The Place itself is semi-octagonal on plan, with pedimented pavilions in the centre and at the ends facing the river. From the latter, up and down the quay, are thrown long wings, similar in design to the rest of the work. In the centre was placed the Royal statue, where a fountain, decorated with figures of the Three Graces, now stands. The composition, though unquestionably a fine one, is still not quite satisfactory. The probability is that Gabriel, or his son, who succeeded him, was prevented from carrying out the design to completion; for the want of pavilions at the extreme ends of the wings, to balance those at the ends of the Place, makes the whole group look unfinished. An error of judgment, too, seems to have been made in the design of the centre pavilion. It is detached from the rest of the work, and stands slightly recessed, like a keystone out of place, in a narrow opening where two of the older streets converge upon the Place at a sharp angle.

The next improvement was also upon the river front. This was the building, which took place between the years 1750 and 1755, of the Porte and Place Bourgogne. Jacques Ange Gabriel was the architect; but in its present state it does not fully represent his design, for, as contemporary engravings show, the gateway was not isolated, but connected by smaller arches to the buildings at either side. From this down to the Place Louis XV., a considerable distance, was then continued a range of buildings, all uniform in height and general design, thus completing a large and, indeed, the finest portion of the façade of the city. The Marquis of Tourny, who was Intendant at this time, had an eye for fine effects on a large scale, and, except for this work, busied himself more with street improvements than with actual buildings. His great achievement was the laying-out of a ring of boulevards roughly following the boundaries of the city as they then existed; that is to say, the Allées de Tourny, Place Tourny, Cours de Tourny, Place Gambetta, Rue Dauphine, Cours d'Albret, Cours d'Aquitaine, and Cours St. Jean. He was also responsible for the Cours de l'Intendance, Rue Ste. Catherine, and the Jardin Public, though the laying-out of this has been considerably altered since.

This great work of street planning was what really transformed Bordeaux from a mediæval into a modern city. But so great a change was not easily accomplished; and the Marquis de Tourny had to carry out many of his improvements in the teeth of strenuous opposition. The Bordelais could understand the embellishment of a city with fine buildings, public and private. They were not at that time educated to the point of realising that the arrangement of a city itself is of far more architectonic importance than any of its buildings. Moreover, since the Government of Louis XV. was notoriously inconsiderate of the vested interests of any individuals outside its own charmed circle, it is very probable that the citizens, suffering severely from the cavalier methods of their Intendant, were in no mood to consider his actions from the point of view of their great-

La Porte de Bourgogne. Hôtel de Ville. La Bourse.

grandchildren, and to realise what a beneficent and far-sighted tyrant he really was. For there can be no doubt that the city owes nearly everything that is handsome and convenient in the arrangement of her streets to this man's initiative.

Only one memento of the evil days that were gone now remained to be destroyed. This was the old Trompette, no longer feared, but gradually becoming surrounded by elegantly-designed modern hotels. Under the rule of Dupré de Saint-Maur it finally disappeared. In its room it was his intention to lay out a magnificent Place Louis XVI. on a much larger scale than the Place Louis XV. by the waterside. It was to have consisted of a large hemicycle, with thirteen radiating streets, and a colossal statue of the king upon a column in the centre. Open colonnades were to have masked the ends of the streets and to have tied the horizontal lines of the buildings together. The author of this grandiose scheme was Victor Louis; but, owing to want of funds, he was only able to build a fraction of his hemicycle. With the Revolution the whole scheme was abandoned, and in the early years of the last century the less pretentious, but still rather fine, Place des Quinconces came to occupy the ground instead. Ironically enough, too, a modern monument to the revolutionary Girondins, erected about twenty years ago, now dominates the Place from the spot where Louis XVI. was intended to stand.

The Grand Theatre was a more successful project. For this Louis was also the architect—in fact, it was this commission which brought him to Bordeaux—and in the face of considerable financial difficulty he succeeded not only in bringing it to completion but in making it one of the finest buildings of its kind in Europe as well. Externally, except for the open colonnade facing the Allées de Tourny, it is little more than a plain rectangular block, though by no means devoid of importance or dignity. But it is in the interior that Louis' cleverness most displayed itself. In the auditorium, especially, his ingenuity in uniting it in scale and treatment with the proscenium by the use of a large single order, independent of the balconies, and working up to carry a saucer dome, was most successful, and set a fashion which, in some modification or other, has survived to influence theatre design until the advent of concrete and steel abolished the necessity for any supports in front of the balconies and enabled the ceiling to carry uninterruptedly from wall to wall.

Dupré de Saint-Maur was the last of the great Intendants. With the completion of the Grand Theatre came to an end the work of the old *régime*. And, indefensible as its general methods of government undoubtedly were, one cannot help the feeling that the Bordelais owe to its lavish patronage of the arts nine-tenths of the beauty and convenience of their city. For nothing could more eloquently testify to the value of Tourny's street planning than the fact that, with the subsequent growth of the city to more than double its size, the lines of his streets have simply been extended and developed until, to-day, a fine ring of outer boulevards surrounds and echoes those laid out by him.

Looking at the map as it exists to-day, one is inclined to level one's chief criticism at the want of co-ordination between the modern street planning and the bridge. Yet one hardly feels this defect when one is actually in the city. For its backbone is in reality the water front, and the whole plan has been built upon it. The bridge directly approaches the Place Bourgogne and the Cours Victor Hugo—an entrance impressive enough. The Cours Victor Hugo is a fine, wide, modern thoroughfare; but it follows, as its curved shape betokens, the line of the mediæval city wall and is unconnected at its other end with Tourny's system of streets. In all probability Tourny never considered a bridge to be within the range of practical politics. Its construction, indeed, was more than once mooted, only to be abandoned again on the score of the immense difficulty involved in spanning a distance of some 530 yds. over a rapidly-flowing river, with a treacherous sandy bottom. It was not until the days of the Peninsular War that Napoleon, finding a bridge to be a military necessity, insisted on the difficulties being faced and the work carried out. It was not completed in time to fulfil its original object; but its provision has been none the less advantageous, for it is commercially indispensable, while its seventeen sturdy arches of stone and dark-red brick add a monument of considerable beauty to the river.

What has been said about the homogeneous development of the plan of the city applies equally to the architecture of its buildings. With growing prosperity and the construction of new streets there has naturally been much building, both public and private; and in this the influence of the Gabriels and Louis—particularly of the latter—has always been paramount. In the eighteenth century the most important work undertaken, outside the official projects of the Intendants, was the Archbishop's Palace, now become the Hôtel de Ville. Two or three different architects appear to have been employed in its execution, and it is an important-looking building, greatly helped by a screen of columns across the front of the courtyard; for these, in addition to their own excellence, have the effect of masking a certain want of refinement in the details of the work behind. Internally there are a fine staircase and some remarkably elegant decorations of the Louis XVI. period. Such decorations, indeed, run through a whole succession of fine mansions built about this time by the wealthy merchants. Louis himself designed a number of these houses, among which the Hôtel Saige, next to his theatre and now used as the Prefecture, was the most important and has a very dignified elevation to the Cours du Chapeau Rouge. Another, the

Monument des Girondins. La Place de la Bourse. View taken from the Tower of St. Michel.

Plan of Bordeaux.

Hôtel Journu, in the Cours de Tourny, but by L'Hôte, his pupil, is worth a visit, if it were only for the effective planning of its courtyard.

Among nineteenth century buildings Greek influence appears in the Palais de Justice, a worthy edifice of the forties, unfortunately rendered dull by overscaled sculpture and ineffective pediments. But the standard of good design was not allowed to deteriorate. The University, though scattered, is fittingly housed in all its buildings, and particularly in the Medical School, by Pascal, whose elevations are as good in their way as anything done in the eighteenth century. The railway-station, too, is a great monument and forms a worthy gateway to the city, while of less important work, the Savings Bank, near the Cathedral, strikes one as an excellent example, in its elegance and its sanity, of all that is best in contemporary French work.

NOTES.

The Way to Help.

WITHOUT wishing in any way to criticise the action of the promoters of the War Committee formed by the R.I.B.A. and other societies, we feel very strongly that the most useful work which can be done by professional bodies is not to relieve distress but to prevent its occurrence. One of the difficulties of the present position is that contractors are of opinion that they must protect themselves from a rise in the price of materials by introducing a clause which will certainly tend to prevent many firms and individuals from building. If, as we suggested in a "Note" last week, this clause is only introduced in contracts in which certain materials are used, and if an agreement could be arrived at between contractors and architects as to what materials should be included in the list, much will have been done to remove a difficulty which is now experienced. We believe that architectural societies should exert pressure on the Government, firstly, to sanction all legitimate municipal schemes, giving municipalities a longer term for the repayment of loans, and, secondly, to induce the Government to take action in the direction of employing outside architects for contemplated housing and other schemes which are undertaken, instead of increasing the staff of the Office of Works; for we are sure that if this staff is increased now it will not be lessened when the war is over; and, as we pointed out in a recent leader, it would be regrettable if the scope of official architects' work were enlarged in consequence of the unusual conditions now obtaining, and not because it is considered that through their means work can be most efficiently carried out. Without believing that we can will what we want, there can be no doubt that determination and common sense can do much to prevent the occurrence of many evils, and that without them individuals and nations drift to disaster like rudderless ships instead of finding "ports and happy havens."

Why Should We Wait and See?

WE have heard that the Government intend to devote some millions to the provision of housing, and also propose to accelerate the construction of Government works now in hand, but we have also heard of cryptic utterances on the part of the Chancellor of the Exchequer which may be read as indicating an intention on the part of those in authority to discountenance ordinary municipal schemes. We should be the last to advocate the folly of encouraging municipalities to embark on extravagant or unnecessary works, but we are sure, if the last few hundred thousand pounds are, as Mr. Lloyd George suggests, the determining factor in bringing the war to a successful issue, that the best way to secure this amount is to prevent the necessity for relief arising as far as it is humanly possible to do so. With this end in view we think the Government should do all in their power to encourage municipalities to proceed with the erection of public buildings wherever they can be clearly shown to be needed in the interests of the community; and, knowing what ratepayers are, we believe the way to do this is to let municipal authorities see that they will lessen rates by putting work in hand now instead of at a later date. The way to effect this is to increase the period during which loans may be repaid in respect to those schemes which are put in hand during the progress of the war. But we feel strongly that a clear and definite answer on this point should be obtained from the Government, and we do not see why we should have to wait and see what the Chancellor of the Exchequer really means. The public finances have been saddled with the payment of officials in respect to non-remunerative taxation, and the building industries of this country have been the sufferers thereby. In conversation ambiguity is frequently amusing, and there is every justification for the play of words; but in matters like these we want first to know what those in authority mean, and in the second place what they will do. The methods of electioneering are out of place in business.

A Suggestion for the Government.

THE Government have done much useful work during the last five weeks, but there is one little boon which might be offered to the building trade and which would do much to instil confidence and produce better conditions. We have now had considerable experience of the rare and refreshing fruits which they offered for our consumption, and, although we do not dispute either the benevolence of the donors or the excellence of the fruit, the building industry has a digestion which has been, unhappily, upset by the choice viands set before it. Moreover, these same fruits may be likened to hot-house produce which requires an immense amount of care and attention. Indeed, when these delicacies are sold in the open market we are sorry to have to state that they do not realise an amount equal to the salaries of the toilers by whose efforts they are grown and gathered into the national coffers. Would it be too much to ask our rulers to recognise that our digestions are not over-robust and to withdraw the fruits which have disagreed with us? There are among us those to whom caviare and other delicacies have no attractions and who prefer humbler and coarser viands, and for our part we think the Government might recognise that they have displayed more care and solicitude for the well-being of the people than the latter deserve. We are sure that the withdrawal of the land taxes, increment duties, and other like measures would be most popular to contractors and architects, and would do much to ease the present position. Some people get more than they deserve, and we think the building industry is in this category.

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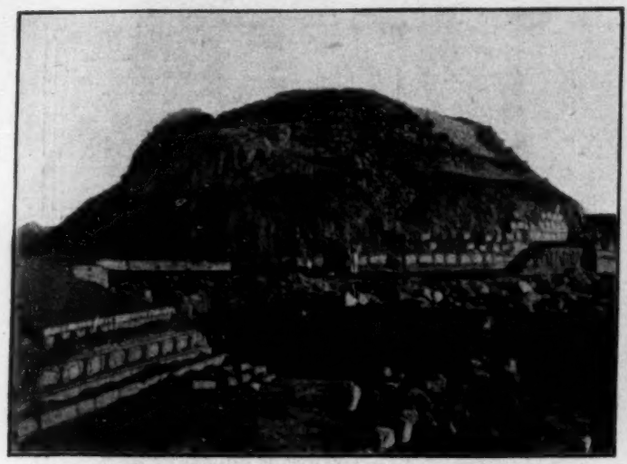


Fig. 1. Chir Tope: General View from South-East.

Fig. 3. Sir Kap: Stupa Base of Time of Azes.

AN ANCIENT CITY OF INDIA.

A MOST interesting lecture was delivered some time ago before the Punjab Historical Society at Simla by Dr. J. H. Marshall, C.I.E., Director-General of the Archæological Survey of India, on his recent discoveries at Taxila. By way of preface to his lecture, Dr. Marshall reminded his audience of the most salient landmarks in the history of the city. The foundation of Taxila goes back to a very remote age, and of the epoch before the time of Alexander the Great nothing practically is known, beyond the fact that it was probably included in the Achæmenian Empire of Persia, and that the city enjoyed a great reputation as a university town, famous for the arts and sciences of the day. Taxila submitted to Alexander in 326 B.C., but four years later the Macedonian garrisons were driven out by Chandra Gupta, and the city then passed into the hands of the Mauryan Emperors, to whom it remained in subjection till the death of Asoka. In the second century B.C. a line of Greek princes was again ruling at Taxila, and after them came a dynasty of local Scytho-Parthian kings, who reigned till about A.D. 75. These were succeeded by the Kushan Emperors, among whom the name of Kanishka is the most celebrated. Thus, said the lecturer, within four centuries Taxila became subject to five separate empires—the Macedonian, the Mauryan, the Bactrian, the Scytho-Parthian, and the Kushan—and from these different civilisations, extending from Greece to Western China, and from the steppes of Russia to the Bay of Bengal, she must have inherited much of the culture and arts peculiar to each. In the fourth century the history of Taxila comes to an end, and when Hiuen Tsang, the Chinese pilgrim, visited the city in the seventh century he found the state had become a dependency of Kashmir, and that the monuments of her former greatness were in ruins.

Such, said Dr. Marshall, was the bare outline of the history of the city, but he warned his audience that the facts he had given, and which he personally believed to be well established, were by no means accepted by all historians. For example, the Kushan Emperor Kanishka was placed by some authorities in the middle of the first century before Christ, thus antedating the majority of the Scytho-Parthian kings, while the rise and fall of the latter and of the Greek dynasties was also a subject of controversy, and doubt existed as to which kings reigned over Taxila and which over other principalities. There was, therefore, ample scope at every turn for the spade to do its share in clearing up these doubtful points, and no less scope for it to throw light on the evolution of the architecture and plastic arts in this part of India, about which knowledge has been even more nebulous.

Dr. Marshall then described the position of Taxila, which lies some twenty miles to the north-west of Rawal Pindi, in a pleasant and well-watered valley, with hills on the north, east, and south. Its position on the great trade route which connected India with Central and Western Asia, coupled with the strength of its natural defences and a constant supply of water, sufficiently explained the growth of the city in the early times. Dr. Marshall referred to three chief settlements—the Bir mound to the south, Sir Kap in the middle, and Sir Sukh to the north, with clusters of smaller remains grouped round each. These, he said, represented three separate cities, built, like the several cities of Delhi, by successive dynasties, the parallel between the two cities being closer for the reason that in each case the new capitals were shifted farther and farther north.

The three cities and their remains cover an area of a dozen square miles or more, and Dr. Marshall added that the examination of such a vast site will occupy many years. At present trial diggings have been made at four places only—the *Chir* tope, Sir Kap, Jhandial, and the Bir mound, representing some three months' work.

The *Chir*, or "split," tope (Fig. 1) was first described by the lecturer. This stands high above the Tamra-nullah, which is identical with the stream called Tibero-nalo or Tiberopotamos by the classical authors. The plateau is an accumulation of the *débris* of fallen dwellings, and the last of these appear to have belonged to the period of Greek rule, for a collection of twenty-eight coins of the Greek King Zoilos—all of a hitherto unknown type—were found here by Dr. Marshall. The main *stupa* was examined by Sir Alexander Cunningham some fifty years ago, who said that nothing was left of its outer casing. Dr. Marshall pointed out that his recent excavations have shown General Cunningham to have been mistaken, for on the north and south sides the base of the *stupa* was found to be comparatively well preserved, while round about were found a number of other interesting structures, which, extending as they do over a period of some 400 years, furnish important data for the history of local architecture, while the coins and minor antiquities found there help to settle several chronological problems.

The main tope, as now exposed, had, said the lecturer, a circular base with a flight of steps on the south, and probably also at the other cardinal points. The core is of rough rubble, the outer facing being of ponderous limestone blocks, with carefully-chiselled *kankar* stone let in between them for mouldings and pilasters, the whole having been originally finished with a coating of lime-plaster and paint. The decorative details were closely analogous to those of the Scytho-Parthian buildings of Azes. Other edifices gradually sprang into existence round this tope, and their chronological sequence was of considerable importance. There were four distinct types of buildings—first, the rubble work of the Scytho-Parthian period; secondly, the neat small diaper type, which seems to have come into fashion at Taxila in the later part of the first century A.D.; thirdly, the coarse and massive diaper, which dates from the second century A.D.; and, fourthly, the semi-ashlar, semi-diaper type, which came into vogue in the third century A.D. Dr. Marshall's excavations at one building revealed a floor of glass tiles of light azure blue, while in another were found two relic caskets of steatite with two miniature gold caskets inside them, holding relics, pearls, and other stones. An apsidal temple was also found, Dr. Marshall adding that he was also fortunate last winter in finding two other examples at Sanchi and Sonari, in Central India, which antedate by several centuries any hitherto-known examples. The excavation of two other *stupas* showed their lowest terraces to be adorned with rows of Corinthian pilasters, surmounted by a frieze and dentil cornice, trefoil niches occupying the centres of each side between the pilasters. The minor antiquities found by Dr. Marshall on the *Chir* tope were coins, Gandhara sculptures, and terra-cotta or

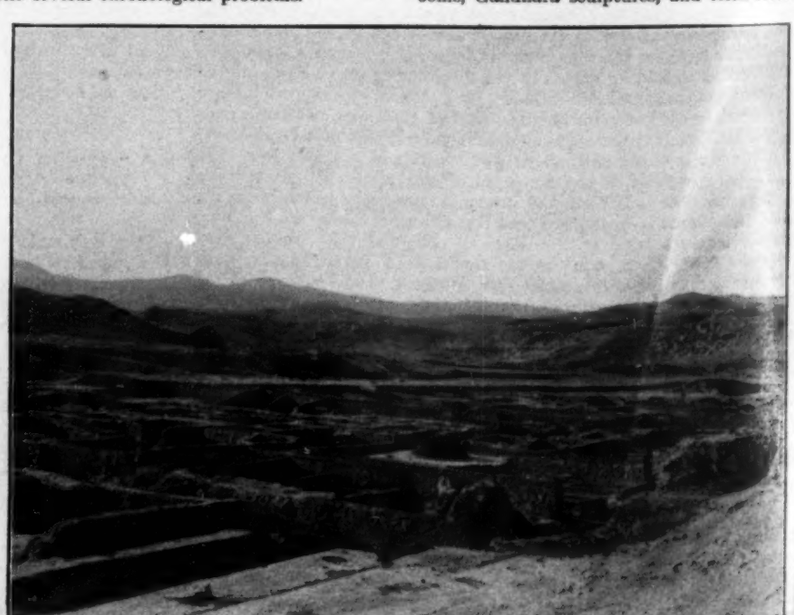


Fig. 2. General View of Two of the Houses in the City of Sir Kap.

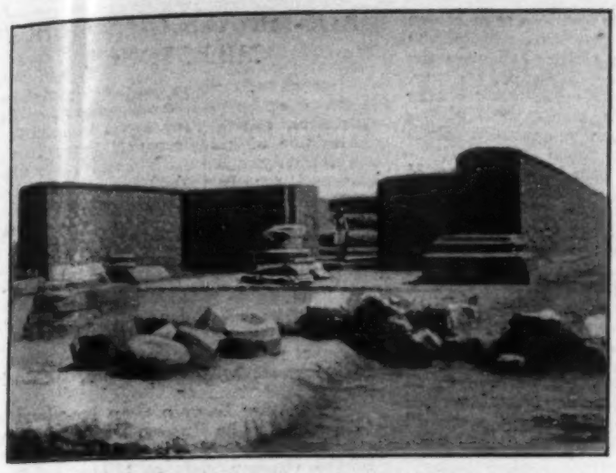


Fig. 4. Jhandial: Front View of Temple with Ionic Columns.

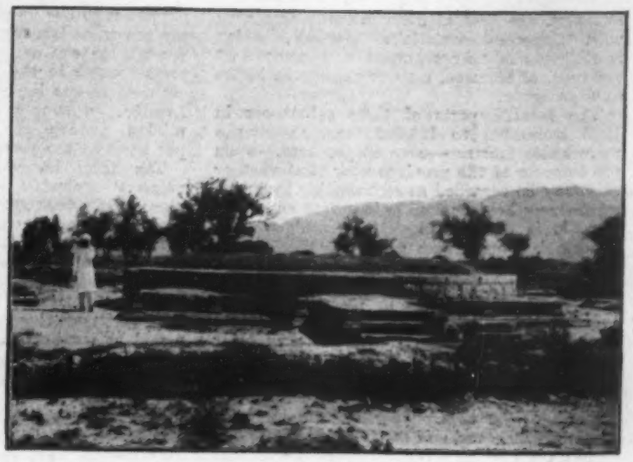


Fig. 5. Jhandial: Base of round stupa of semi-diaper, semi-ashlar masonry resting on remains of square stupa of Scytho-Parthian date.

stucco figures. The coins found of Wima and Kozoulo Kadphises Dr. Marshall assigned to the latter part of the first century A.D., those of Kanishka and Huvishka to the second century. He added that the evidence from this site pointed to Kanishka having reigned in the second, rather than the first, century A.D., and that it entirely precludes 58 B.C. as the date of the accession. His opinion was that the Gandhara sculptures from the *Chir* tope will be found to belong to the second and third centuries A.D. Some 200 life-size stucco and terra-cotta heads were also found, these materials apparently being preferred by the Taxila artists to stone. These, said Dr. Marshall, probably belonged to the latter half of the third century or the early part of the fourth.

The excavation at Sir Kap (cf. Fig. 2) revealed buildings with underground chambers entered from above, and Dr. Marshall quoted Apollonios, who is said to have visited Taxila about A.D. 50, and says of it that "from the streets the houses seemed only of one story, but they all had an underground floor." Some of the decorations found (Fig. 3) presented an interesting combination of Indian and Hellenistic features, Greek mouldings and Corinthian pilasters being found with Indian *torana* gateways, and niches with curvilinear roof and brackets. An interesting feature was a double-headed eagle, adopted at a later date in the Imperial arms of Russia and Germany, found over one of the niches, which occurred, as far as the lecturer knew, for the first time in Hittite carvings, but appears to have been particularly associated with the Scythians, from whom it may have been borrowed by the Scytho-Parthians. Sir Kap was considered by Dr. Marshall to have been founded first in the Greek period and occupied by the Parthian kings and Kozoulo-Kadphises. In one trench more than 600 coins were recovered, ranging from the time of Agathokles to Wema-Kadphises, the kings most frequently represented being Apollodotos, ten specimens; Maues, fourteen; Azes, 210; Gondophares, thirty-two; Kadphises and Hermæus, 126; Soter Megas, 6; and local Taxilan, twenty-two. Coins were also found of the Greek kings—Agathokles, Heliokles, Lysias, Menander, Philoxenos, and Hippostratos; of the Scytho-Parthian—Vonones, Azilises, and Abdagases; and of the Kushan, Wema-Kadphises. No coins of Kanishka or his successors were found on this site, which Dr. Marshall considered was conclusive proof that Sir Kap was abandoned as a city before their time, and also that Kanishka reigned after Wema-Kadphises, and not in the first century B.C.

The work on the Jhandiala site was then described by Dr. Marshall, who said that the excavations here revealed an imposing temple (Fig. 4) unlike anything hiterto known in India, and bearing a general resemblance to a Classical temple, the outer peristyle being replaced by a solid wall pierced by windows, and another chamber added inside the sanctum, perhaps to get over the difficulty of roofing so wide a space as 50 ft. The walls of the temple were built in second-century diaper masonry, with Classical mouldings at the base. The temple appeared to have been burnt down, and Dr. Marshall said that in the deposits of charred timber, resulting from the burning of a building, the richest finds of seals, terra-cotta coins, and other objects which were not seriously injured by heat were often made. Excavations at another mound on this site (Fig. 5) resulted in the finding of a collection of coins of the nameless king, "Soter Megas," a contemporary of Wema-Kadphises. In the spoil earth of another mound, which had been thrown out by a previous explorer, Dr. Marshall found a silver casket enclosing a smaller one of gold with a relic bone inside.

Excavation at the Bir mound gave 160 punch-marked coins of debased silver, a fine gold coin of Diodotos, struck in the names of Antiochos II. of Syria, several pieces of jewellery, and a large number of precious stones. A gold pendant in the design of a tiger's claw and a little reliquary of beautiful design were also found, and the coins of Antiochos Theos, as well as the punch-marked coins, point to about 250 B.C. as the date when this jewellery was hidden in the ground, while the gold claw and reliquary, more worn than the other pieces, were probably half a century earlier. Fifty earthenware vases were discovered in a neighbouring well. Dr. Marshall considered the Bir mound represented the period of the Mauryan occupation of Taxila, but added that every thing pointed to the possibility of even earlier remains being found at lower levels which would throw light on an age of which at present there are no monuments in the Punjab. Dr. Marshall's concluding remarks were as follows:—

"To sum up the results of these investigations. First, we have settled generally the disposition of the site; have determined the ages of the several settlements in the city of Sir Kap; and have found that the settlements on the Bir mound are anterior to them.

Secondly, we have recovered a number of monuments of the Parthian and Kushan epochs, and by fixing their relative dates have established a series of much-needed landmarks in the history of architectural development. The prevailing spirit of the Scytho-Parthian architecture has been found to be Hellenistic, the Indian elements being subsidiary; and this architecture leaves no room for doubt that the Scytho-Parthians played a prominent part in the diffusion of Classical ideas in India—a fact which has an intimate bearing on the evolution of early Indian art. Moreover, by correlating other known buildings in the Punjab and Frontier Province with the series of monuments I have discovered at Taxila, it is now possible to determine within narrow limits the age of the former. For example, it is now apparent that the remains at Tareli belong to the close of the first century of our era, while the celebrated *stupa* at Ali Masjid proves to be more modern by 200 years than was previously supposed; and I have no doubt that the age of other famous structures, such as the tope of Manikyala and the monasteries of Jamalgarhi and Takht-i-Bahi can be fixed in the same way.

Thirdly, we have secured an abundance of sculptured images, which, like the architectural remains, furnish us with new and valuable data for the chronology of the plastic arts.

Fourthly, we have demonstrated that Buddhism was the prevailing religion at Taxila in the Scytho-Parthian epoch; and, consequently, the generally accepted opinion that Kanishka was responsible for the hold which Buddhism took upon the north-west of India must be discarded.

Lastly, we have obtained clear and, to my mind, conclusive evidence both from our coins and from our buildings as to the sequence of the Greek, Parthian, and Kushan dynasties, and we have found that there are no grounds for supposing either that Kanishka intervened in the first century before Christ, or that the Parthian Maues was reigning in the second century of our era."

BUILDING MATERIALS AND THE WAR.—III.

In our last issue we dealt with the important subject of timber, and now turn to a few materials which, though of smaller moment, are not less necessary in most building projects. There are further some decorative materials which, though more readily replaced by substitutes than those which are purely constructional, are still likely by their curtailment to cause difficulties in work already in process of execution.

Marbles.

Though the country possesses marbles, by far the greatest quantity used are imported, those of Greece of course standing pre-eminent, while the Italian and Sicilian varieties are hardly less well known in this country. How long Greece and Italy will hold aloof from the general infection of war seems doubtful, but at present the supplies from these countries should remain nearly normal. Austria, Norway, France, Belgium, and Switzerland also send us marbles, the two first named including white as well as other varieties, and from these quarters importation will naturally be small. A large quantity of material reaches us from Belgium in normal times, and as the centre of the industry is Namur, we must expect complete cessation from this source for some time after the conclusion of hostilities. Our own marbles come from Derbyshire, Stafford, and Devon, while serpentines are found in Cornwall and in Ireland and Scotland. Many of the English marbles, however, are really crystalline limestones rather than genuine metamorphic rocks. Serpentines, though very beautiful, are unobtainable in large pieces, and stand transit and exposure very badly. Probably the greatest embarrassment, because of its volume, will be found in the Terrazzo trade, and if the belligerent circle increases, white marbles at least are likely to be rapidly at a premium. Swedish green marbles, which in many cases are not marbles at all, but serpentinous rocks, which are very popular on account of their softness and ready workability for mosaic purposes, are also likely to become scarce as stocks get depleted.

Bitumen and Asphalt.

Though this country is exceptionally situated as regards coal supply, very little workable bitumen is found in the United Kingdom. The once famous deposits of Torbane Hill, near the Firth of Forth, where bitumen is found in the solid form, and which played an important *rôle* in the early development of the paraffin

industry, are now of little moment compared with imported materials. Asphalt, which is merely chalk impregnated with some 6–12 per cent. of bitumen, may be considered in the same category.

The total imports of these substances in 1913 amounted to 148,000 tons, showing a remarkable increase—over 40 per cent.—upon the imports of the previous year: but whether this may be regarded as representing increased stocks now held or merely increased consumption, it is difficult to determine. The total exports last year were only some 7,000 tons, hence one of the above conclusions must stand. Unfortunately, a very large percentage of our supply reaches us from belligerent countries. From France, chiefly from Seyssel on the Rhone and Val de Travers on the right bank of the Reuse, we derived 18,000 tons. From Germany, in which Linmer in the Hanover district ranks as the most important centre, we had 47,000 tons. Italy sent 18,600 tons, Mexico 26,000 tons, and British West Indies, the supply from which is centred round the famous pitch lake of Trinidad, supplied 33,000 tons, in the form of bitumen. The uses of asphalt are so great partly owing to the increasing popularity of flats in place of pitched roofs, that shortage seems inevitable. Perhaps some engineer will devise a method of imitating nature and impregnating chalk with bitumen under the combined effects of heat and pressure, and thus produce artificial asphalt with the aid of natural bitumen. Since some 90 per cent. of the material is chalk such artificial production should be very profitable if it could be successfully carried out. In a confined space chalk may be heated to a very high temperature without permanent decomposition, hence the process is feasible enough theoretically.

Glass.

The glass industry represents a sphere of production which has been practically lost to this country through the energy of our trade rivals and the supineness of our manufacturers, and offers a good example of the way in which the lack of appreciation of the value of scientifi training may prevent trade developments of the greatest importance. We are not concerned with the higher branches of the glass industry. The production of lenses, with their delicate components varying in curvature and refractive index, the enormous trade in chemical glass apparatus, and even the glass bottle trade, have almost become a negligible quantity in the great outputs of the country, but those interested in these industries are doubtless urging revivals in these particular directions. Of plate and sheet glass, which concern this discussion, we make but little compared with our consumption, and few indeed are the manufacturing firms in this country.

The Board of Trade returns include shades and cylinders in the figures for sheet glass imports, which in 1913 amounted to 1,239,000 cwt. Of this Belgium sent no less than 1,073,000 cwt., Germany 144,500 cwt., Austria 2,000 cwt., France 1,840 cwt., and other countries only 306 cwt. British possessions sent us none, and it will be evident that we could hardly be in a more unfortunate position as regards our external sources of supply.

The imports of plate glass amounted to 442,000 cwt., of which Belgium again sent by far the most, namely, 384,200 cwt., Germany 37,800 cwt., the Netherlands 10,800 cwt., and France 9,600 cwt. A large quantity of this glass is, however, re-exported. Efforts to expand our home industry in the production of window glass will meet with some obstacles, the much prized sand from the forests of Fontainbleau, for example, are not likely to be obtainable at present. Good sand for the glass industry occurs at Alum Bay, Isle of Wight, and inferior kinds are found in Wales, Bedfordshire, and Lancashire. America can also help with suitable sand. In conclusion, it is difficult to see how some shortage in window glass can be avoided.

Paints.

Though we have many large paint factories in this country, imports are considerable, and come from belligerent countries in a very large measure. Out of the total German exports of white lead, for example, valued at £256,500, the United Kingdom received £152,000 worth. This material, which forms the basis of so many paints, will naturally rise in price with any scarcity of lead, and offers a good opportunity for the adoption of zinc white as a substitute, for although our imports from the same source are not much less than for white lead (£138,000 worth), there is not the sinister call upon the metal, which in the case of lead is, we hear, required in one important centre not far from London, to supply the manufacture of ten million rounds of rifle ammunition alone per week at the present time.

The total imports into this country of painters' materials aggregate from Germany alone nearly £800,000 worth of goods, including, besides the above mentioned, barytes, £98,000; red lead, £75,000; blue and green pigments, £26,000; ultramarine, £33,000; lithophone, £47,000; chromes, £23,000; metal colours, £38,000, and so on. To give particulars of the large variety of these goods from other countries would be merely to quote statistics which can be readily obtained by those specially interested. We have taken the German trade as an example not only to show our most important direction of curtailment, but as indicating a new field for British manufacturers which, if they wish, may become their own.

Organic colours derived from aniline products are of course peculiarly German. This was our trade, and its initiation by our own countryman Perkin is almost still a matter of current history. The use of organic dyes in painting is small, but if a digression is permissible, an opportunity for regaining this great and important industry occurs now as it will never occur again, and it is for the Government at the present time not only to publish information, but to coax into life by, if necessary specific premiums, industries such as these which once matured would form such a lucrative asset to the nation.

Oils and varnishes are also largely imported. The supplies of linseed oil may be expected to be somewhat disturbed and may give us an opportunity of learning something more of the properties and uses of Tung oil or even Menhaden fish oil. The gums from which varnishes are made are not likely to be much affected as far as the better examples are concerned, and other so-called copals are outside the disturbed trade area for the most part.

In this brief survey of materials no attempt has been made to deal with specific manufactured articles, which would, of course, require alone a lengthy consideration for adequate treatment.

Manufactured Articles in Timber.

We have been interrogated by a correspondent as to the manufactured articles in timber which are imported into this country from abroad.

To give detailed statistics would involve research which can hardly be given without some delay. We can, however, suggest a suitable source of information. The annual volume of statistics issued by the Board of Trade dealing with imports and exports provides some general statements. More detailed particulars appear in the *Board of Trade Journal*, published weekly, while specific information as to the imports from various countries should be sought for in the Diplomatic and Consular Reports which are issued usually annually, but at irregular intervals, and give the value o weight of manufactured wood exports and imports to and from various countries. These reports, varyng in price from ½d. to 6d., can be purchased from Messrs. Wyman, or seen, together with the *Board of Trade Journal*, at the Patent Office Library, Chancery-lane, by anyone between 10 a.m. and 4 p.m. (10 a.m. and 1 p.m. Saturdays). The value of manufactured wood imported into this country for the first eight months of this year was £1,964,179, as compared with £2,366,993 for the same period last year, and £1,825,495 for a like period in 1912. The imports in question from Sweden for the last annual return were valued at £71,000.

BUSINESS PREMISES, REGENT-STREET, W.

Adjoining the Oxford-circus building of Messrs. Louise & Co. and conforming to the elevation by Mr. Henry Tanner, F.R.I.B.A., new premises are being erected in Regent-street for Messrs. Sykes, Josephine, & Co. The architect is Mr. C. T. Armstrong, A.R.I.B.A., Charing Cross, S.W. The general contractor is Mr. A. N. Coles, New Mileage-yard, Harrow-road, W.; the steelwork is by Messrs. Smith, Walker, & Co., Tothill-street, Westminster; and the lifts are by Messrs. A. W. Penrose & Co., Ltd., Farringdon-road, E.C.

KOS-MINARS OR MOGHUL MILESTONES.

VISITORS to Northern India will have noticed in travelling by road or rail quaint tower-like structures, raising their heads in solitude in the middle of some cornfield through which ran formerly one of the great roads which traversed the empire of the Great Moghul. These Kos-Minars, as they are called, are of brick or stone masonry externally plastered. For decoration the plaster was painted, or there was some simple pattern in tile mosaic. On none of them have yet been found any directions as to place or distance. "Kos" is a Hindi word used for a distance of, roughly, about 2½ miles, while "Minar" (correctly "Manar") is an Arabic word meaning a "place where a light is kindled," or a lofty tower.

The distance between these kos-minars has been found to be between 2 miles 3 furlongs and 2 miles 5 furlongs. The example shown in the photograph is at Sizhind, in Patiala State.

The Moghul Emperors paid great attention to their roads. Caravanserais and wells were built at frequent intervals for the comfort of travellers, while shady trees made marching bearable.

Jahangir, Moghul Emperor from 1605–1627, says in his memoirs:—

"Now I have ordered that milestones be built at every *kos* from Agra to Lahore, so that it may be the sign of the *kos*." Elsewhere in the same memoirs, "according to the order, from the capital of Agra to the river of Atak, on both sides (of the road) trees were planted and avenues arranged, and similarly from Agra to Bengal—also a well at every three kos for the comfort of travellers."

The Archæological Survey of India is preserving these most interesting landmarks from decay.

HOUSING PROBLEMS IN ROME.

THE modernisation of Rome is remarked on by Mr. Consul C. C. Morgan in a Consular Report on the trade of the city and district in 1913. He says:—To anyone who has not been in Rome since 1880 the present aspect and general topography of the Italian capital must seem completely changed. The city has gradually expanded beyond its old walls in every direction, and the population has almost doubled since that year. Houses of all sizes, from the huge blocks in the poorer districts to the smaller villas of the wealthier classes in the

Kos-Minar.

upper part of the city, have taken the place of the former vineyards and orchards, and, simultaneously with all this building activity, most important excavations are being carried out so as to bring to light the remains of the monuments of ancient Rome—a circumstance which tends to corroborate the repeated official statements that in modernising Rome it is not intended to efface the vestiges of the past. As a result of the increased housing accommodation the demand for rooms is not so persistently pressing as it was a few years ago, but rents are still very high, a fact which is attributable to the present scale of wages demanded by workmen and to the increased cost of building materials, so that a house built now must necessarily cost almost twice as much as it did in former years. In order to counteract these adverse factors certain exemptions from taxation have been accorded to new buildings, but, notwithstanding that, the rent of apartments continues to be very high. The municipal authorities, deeply concerned at this state of affairs, resolved, six years ago, to levy a tax of 3 per cent. per annum *ad valorem* on all vacant building sites within the communal area. It was hoped that as a result of that fiscal burden landlords would hasten to build over their lands and thus increase house accommodation. Instead of that, however, the landlords momentarily thwarted the operation of the order by filing an application against it in the courts. The latter have recently decided in favour of the municipality, and every effort is now being made to collect the tax, which is estimated to yield £120,000 a year. The revenue under that heading will naturally be a decreasing one, as some of the landlords will no doubt find it more convenient to build rather than to pay the tax in question.

There are evidences here and there of a most healthy tendency to create new industries and free the Italian capital as much as possible from its costly and inconvenient dependence upon the products of other districts. The process of transformation must necessarily be slow, and is retarded by the unfavourable railway connections between the coast and the city and the present high cost of living. The latter question has attracted a great deal of attention, but none of the measures adopted by the authorities have to any appreciable extent helped in reducing the price of commodities. The attempt to import frozen meat from South America, and also from Australia, does not seem to have met with any great success. Co-operative building and stores associations have been formed among members of the Civil Service, who amount to a considerable number in Rome, as well as among railway servants, operatives, etc., and they have succeeded in securing for themselves certain facilities and reductions, especially in connection with houses, in which the general public, however, is not allowed to benefit.—*Manchester Guardian.*

GENERAL NEWS.

Working-Class Houses for Beaconsfield.

On a site given by Lord Burnham at Beaconsfield the Urban District Council is about to erect forty houses for the working-classes, and application has been made to the Local Government Board for leave to borrow £9,600.

The New Housing Act.

A deputation from the National Housing and Town Planning Council recently met representatives of the National Federation of Building Trade Employers of Great Britain and Ireland and the Institute of Builders to discuss the administration of the new Housing Act. The representatives of the Council were assured that the National Federation and the Institute would recommend builders throughout the country to co-operate with local authorities in the administration of the Act, with a view to keeping down the cost of cottage building during the war. It was further decided that the President of the Board of Trade should be asked to receive a joint deputation asking for definite action to be taken by the Government to regulate the prices of building materials, and especially of those required for the building of cottages under the new Housing Act.

Demolition in Regent-Street (East Side).

A notable house, No. 246, at the corner north of Regent and Little Argyll streets, is in course of being pulled down. In the first decade of last century Colonel Greville, the noted sportsman, effected many alterations of the house of a Mr. Jolliffe, at the corner of Little Argyll-street and what was then Swallow-street, for a fashionable association or club known as "The Pic Nics." The venture had but a short life; one Mr. Slade entered into possession of the premises, and let the rooms for concerts and other entertainments. In 1813 the rooms, styled the Argyll Rooms, were rented by the newly-established Philharmonic Society. The Argyll Rooms being required for the laying-out of Regent-street, with the absorption of nearly all Swallow-street, Slade obtained £23,000 by way of compensation in 1818. Nash designed the new Harmonic Institution, with the adjoining Nos., 248–250, as part of the block between the circus and Little Argyll-street, with a return frontage of 50 ft. to the latter thoroughfare. On May 25, 1829, Mendelssohn first appeared before an audience in London in these rooms as conductor of his Symphony in C minor, and there, on midsummer-night of June in that year, he produced for the first time in England his overture to "A Midsummer Night's Dream." The Philharmonic Society continued to occupy the Rooms until their partial destruction by fire on February 6, 1830. In the reinstatement of the premises, No. 246 was shorn of the cupola rising on scamilli from within the parapet, and Nos. 248–50 have replaced the concert-room—so famed for its acoustical properties—built for Welsh & Hawes, which had a balcony projecting over the ground floor and carried upon eight termini, of which the female heads were sculptured by J. G. Bubb—*confer* Wallis' print of 1827, after a drawing by T. Hosmer Shepherd, made for Elmes's work upon metropolitan improvements.

Town Planning Schemes.

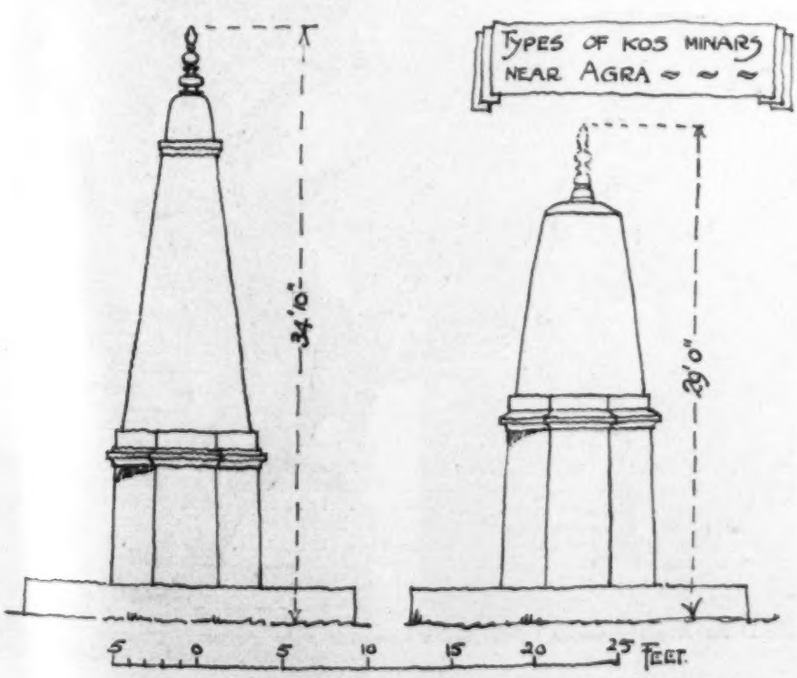
The Council of the Newport (Mon.) Corporation has decided to proceed with their Somerton housing scheme.—The Local Government Board has given sanction to the Atherstone District Council to borrow £1,440 for the purchase of land on which to erect working-class dwellings. The Council's scheme is to erect about sixty houses on this plot of land, consisting of 5 acres, which is at the present time used as allotment gardens.—The Local Government Board recently held an inquiry concerning the housing question at Bitton, complaint having been made that the Wormley District Council had neglected to exercise their powers under the provisions of the Housing of the Working Classes Act. The Local Government Board Inspector said in the ordinary way the housing scheme would be a charge on the district, but the Council could make application for it to be a charge on the parish.—The Holywell Rural District Council has decided to erect twenty-two workmen's houses, at a cost of £5,230, on a site acquired from Lord Mostyn, and thirty houses at Bagillt, at a cost of £7,695. The Council has further resolved to ask the sanction of the Local Government Board to borrow £13,500 for the purpose.—In the report of the Local Government Board inquiry on housing in Greenock, which was recently held, it is recommended that the Corporation proceed with the erection of 250 houses, and with a similar scheme a year hence, the class of house to be determined by arrangement between the Board and the Corporation.—The Riccall R.D.C. have received the sanction of the Local Government Board to obtain a loan for £3,810 to carry out the projected water supply scheme for the parish of Barlby, near Selby.—The Abertillery District Council recently considered a letter from the Local Government Board with regard to housing, this stating that such sums as might be made available under the Act could be utilised for the joint purposes of housing and improving housing accommodation for the working classes, and preventing or mitigating unemployment in the building trade. It was resolved that the Local Government Board be asked to receive a deputation with a view to schemes at Rose Heyworth and Aberbeeg being put in hand.

Bonding Asphalt to Concrete.

Among the several problems to be met in the recent construction of the concrete reservoirs in San Francisco was that of bonding asphalt to concrete. According to B. N. Abbott, in a letter to *Engineering Record*, after making unsuccessful attempts to apply the asphalt direct to the concrete in various ways, the expedient of first painting the surface with coal tar was tried, and it was found that when applied in this way under right conditions the asphalt would adhere so firmly that after it had cooled it could not be broken away without bringing pieces of concrete with it. Mr. Abbott states that, in order to secure this result, the concrete surface was first scrubbed clean with a bristle brush, and over this a thin coating of hot coal tar was "painted." The coal tar should be heated in small quantities, brought just to the boiling point, and then applied immediately. Heating the coal tar in large quantities, which necessitated some delay before it could all be used, did not give such good results, and the gangs were therefore not allowed to heat more at a time than they could apply quickly as soon as it began to boil. The asphalt was spread over the tarred surface in the usual manner.—*Contract Record.*

A New Brick-Cleaning Machine.

The same journal also mentions that there has been invented by a Philadelphia, Pa., mechanic a machine to clean used brick that will cut the cost to half or even a third of that of the old-style method of cleaning by hand. It is estimated that the numbers of bricks cleaned in that city in a single year is not less than



(See page 283.)

25,000,000, at a cost of 1 dollar to 1 dollar 50 cents per 1,000. This new machine will clean them for about 50 cents a thousand. The method of operation is to put the brick into the jaws in front of the machine, which grasp it and move it sideways over the corrugated surface. This cleans the end of the brick, and at the same time the two broad sides at top and bottom are cleaned for about 2 in. back of the end. The partially cleaned sides are then inserted between two projecting opposed blades of a four-sided die, and a plunger at the other end of the brick comes forward and pushes the brick through. The upper plate of the die is movable, and adjusts itself automatically to the thickness of the brick. The sides, as well as the bottom and top of the brick, are thus cleaned all at the same time. The machine is 4 ft. long and weighs 400 lb., so that it is readily portable. It is placed upon a platform or truck so as to be about breast high. It can be operated by either one or two men, and with an engine of 2½ horse-power its capacity is fifteen bricks a minute. It can be adjusted to work slow or fast as desired. The commercial value of this invention lies in the fact that when by reason of the cost or because of lack of time, old bricks are not cleaned—they are thrown away as useless. With the device these bricks may now be saved. In New York 100,000,000 brick are now cleaned annually by hand.

Northampton Polytechnic Institute.

The Northampton Polytechnic Institute, St. John-street, E.C., has recently issued the list of arrangements for the session 1914–1915. The institute is a technical, social, and recreative body for both sexes. Applicants for membership, with a few exceptions, must be between sixteen and twenty-five years of age, but there is no limit of age as regards students. There are day and evening courses in various subjects, including engineering (civil, mechanical, and electrical), artistic crafts, etc. The classes of the day courses commence on Monday, September 28, and those of the evening courses on Monday, September 21.

Antique Furniture at the Mansion House.

Interesting antique furniture has recently been brought to light at the Mansion House and restored. It includes examples of Sheraton's and Chippendale's works—wardrobes, chests of drawers, sideboards, and chairs of the period 1760–1820.

The British Lion.

A correspondent draws our attention to an excellent piece of sculpture we illustrated some years ago, as he considers it very typical of the national state of mind at the present moment. We think the lion looks like business, and we meet our correspondent's wish with pleasure, as we think he deserves encouragement for studying the back numbers of our journal.

"British Competitions."

We have before us two numbers of "British Competitions" (Alexander Koch & Sons), the first dealing with the Bradford Town Planning Competition (2s 6d.), and the second with the Belfast Art Gallery and Museum (4s.). Both are well produced, and should prove interesting and instructive to those interested in competitive struggles. Many able designs have their only chance of immortality in such records.

BOOKS.

The Maintenance of Foreshores. By ERNEST LATHAM, Assoc.M.Inst.C.E. (London: Crosby Lockwood & Son. 2s. net.)

A PRACTICAL handbook containing contributions upon the surface formation of promenades, by Colonel Crompton, Consulting Engineer to the Road Board, also a useful chapter giving conclusions arrived at by the Royal Commission on Coast Erosion by A. E. Carey, M.Inst.C.E.

"Foreshore" is defined upon pages 63 and 64 to be that variable area of unstable tide-washed ground which is bounded by the limits of high and low water levels. The travel of beach is asserted (page 37) to follow the direction of a flood tide upon a coast free from bays and inlets, but where such exist or where artificial barriers are installed, in order to trap the general trend of beach-travel it is shown that the latter should not only be carried into low water, but must also join on to a longitudinal revetment or wall above high-water level so as to obviate the occurrence of a gap likely to invite scouring action (page 45); and while the Author points out upon page 3 that in his opinion a system of groyning should be adopted as a last resort to preserve a foreshore, he admits on page 41 that, where a protective apron or toe to a parade wall or longitudinal screen appears inadmissible, "groyning" as a rule must be comprised in any scheme of works if the site is one on which erosion is progressive. The Author quotes examples of sea walls from Mr. W. H. Wheeler's book on "The Sea Coast," and also quotes Professor E. R. Matthews' views on the subject of "Coast Erosion and Protection," as well as Mr. R. F. Grantham's opinion upon this subject. Hence the book may be regarded as a compendium of considerations valuable to those responsible for the maintenance of foreshores, concluding with a chapter dealing in detail with materials and construction and a well-arranged index. The subject is a question of the day, and hence we find that papers relating thereto which have been read at the Institution of Civil Engineers and also at the Institution of Municipal and County Engineers receive recognition in the volume. It is well printed, of a convenient size to carry in the pocket, and is published at a reasonable price.

Garden Cities and Canals. By G. J. S. NETTLEFOLD. (London: The St. Catherine Press, 34, Norfolk-street, Strand. Price 1s.)

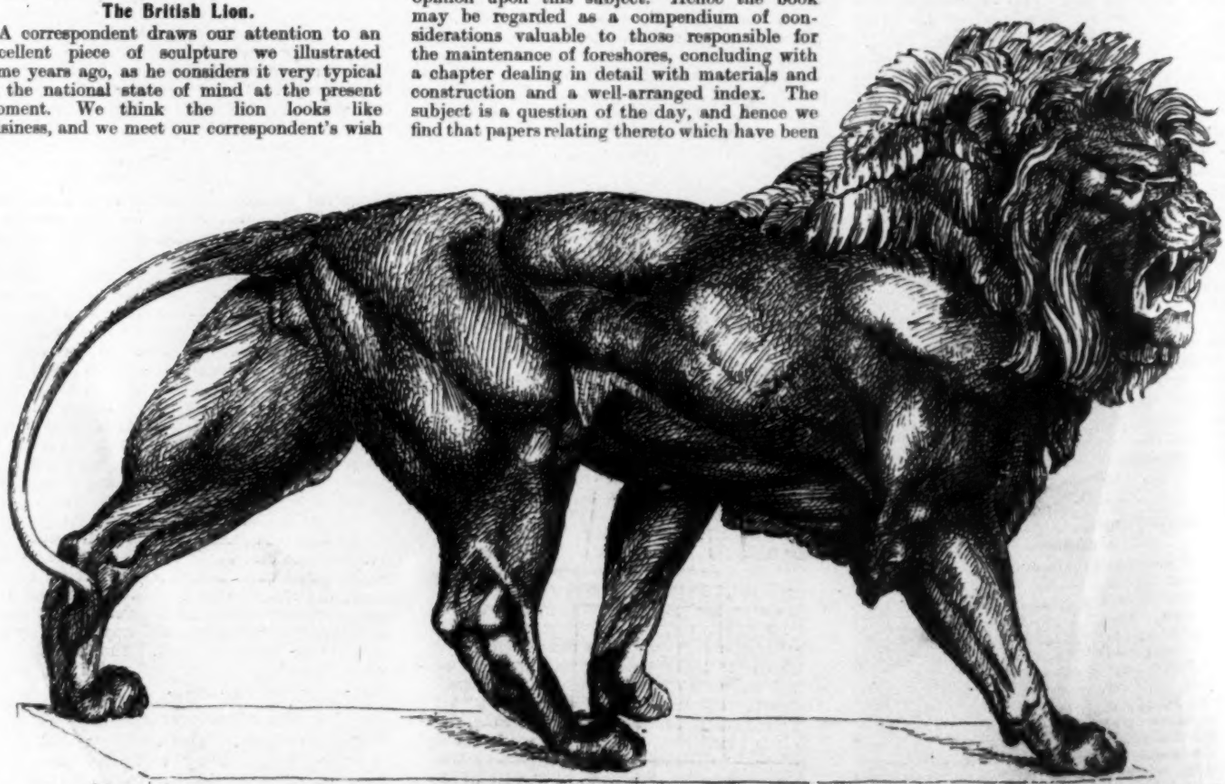
FROM one point of view the simplest way to deal with the housing problem is to build new cities on virgin ground, so avoiding the difficulties created by inflated land values and vested interests. This is the aspect of the question dealt with in this book, which discusses the success of the garden city at Letchworth and the means whereby similar cities could be encouraged and facilitated. One of these means is said to be the reform and extension of our system of inland canals and waterways, so as to afford proper transit for goods. The whole question is thoroughly discussed, comparisons are drawn with the waterway facilities enjoyed by other countries, and the opinion is put forward that the first steps essential to a forward policy are to appoint a National Waterway Board, to acquire and unify existing waterways, bring them up to modern requirements, and create new ones where necessary. An appendix contains a summary of the evidence given before the Royal Commission on Canals and Waterways by Sir John Brunner, while another gives the method for making a survey of the water supplies of Great Britain, outlined by Mr. R. B. Dunwoody. The low price of this book should bring it within the reach of everyone interested in this important subject.

CORRESPONDENCE.

The Architects' War Committee.

WE have received the following correspondence in reference to the Architects' War Committee. The first letter was sent to the Rt. Hon. J. A. Pease, P.C., M.P.:—

Sir,—The Royal Institute of British Architects, feeling it to be their duty, in this national emergency to arrange for such collective action by the architectural profession as may be found to be desirable, have, with the co-operation of members of other architectural bodies, formed an Architects' War Committee, which i



Sculpture at the Royal Academy: Study of a Lion.

By Mr. G. Simonds.

(Reproduced from the *Builder* of May 31, 1884.)

broadly representative of the whole of the profession in the United Kingdom.

This Committee desires to offer to His Majesty's Government an assurance of the loyal and energetic support of the profession in any direction which may be found to be practicable and desirable.

It is felt that the Imperial Government is best able to indicate what form of assistance would be of most value to it, and the Committee would welcome any suggestion from the Government in this direction.

The Committee is prepared to furnish information on all matters in which the State may require the services of architects in any part of the United Kingdom during the period of the war and to give advisory assistance in connection with any scheme of construction which the Government may contemplate in this emergency.

(Sgd.) ERNEST NEWTON, F.R.I.B.A.,
Chairman of the Architects' War Committee.

(Sgd.) C. STANLEY PEACH,
Hon. Secretary of the Architects' War Committee.

The Rt. Hon. J. A. Pease, P.C., M.P.

The following is the reply of the Rt. Hon. Joseph A. Pease:—

Dear Sir,—I have to thank you on behalf of the Government for your letter of September 11, and for the generous and patriotic offer of help made by the Architects' War Committee. I am forwarding your letter to other Government Departments, and if any opportunity of utilising your help arises a further communication will be sent to you.

(Sgd.) JOSEPH A. PEASE.

C. Stanley Peach, Esq.,
Royal Institute of British Architects,
9, Conduit-street, Hanover-square, W.

The Effect of Gratuitous Services of Architects.

SIR,—Whilst the patriotic offers of the leaders of the profession to give their services in this way and that to the Government reflect every credit on the individuals concerned, and through them on all architects, may I venture to offer one word of criticism?

It is very pleasant to read that Sir Aston Webb, Mr. Warren, Mr. Lanchester, and others can afford to say that they have offered to give their knowledge and experience, and presumably also such of their office staffs as remain, for the benefit of the nation, but, sir, I would remind them that every such offer means one or more jobs the less to be placed with their more needy brethren.

At the present moment there are many of us who have seen the practices we have laboriously built up vanish into thin air. Our clients are the smaller people who cannot now afford to do their little alterations or to repair their little bit of house property, and therefore have cancelled all orders and in many cases left their architects with much wasted labour and no prospect of recompense.

Surely these temporary hospitals, referred to by Mr. Lovell and Mr. Warren, might in their very erection do a useful work by helping someone to keep his office and staff going, and the temporary barracks in the same way help to provide the household expenses of an architect before they provide houseroom for the soldier.

In short, sir, I would (and I speak feelingly) urge those who are better off not to give services which if paid for in the usual course would cost the country but little, but would provide employment for those who need it.

ONE OF THE SMALL MEN.

Stamford and its Ancient Domestic Architecture.

SIR,—I have spoken to some dozens of architects about the beauty of Stamford, and it is remarkable how few whom I have met have been there. When I meet such a one his face lights up with pleasure on finding someone else who has been similarly impressed by its loveliness and quaintness.

I think the best view is from the Midland station. Stamford is built on a hill chiefly of brown stone—Stamford stone, Ketton stone, and Edithweston stone, which are all oolites. It is the stone of which the Cambridge colleges are built, of which King's Lynn is built, and which was shipped to many towns on the banks of the Ouse and its tributaries; the stone which weathers, but which does not decay; the stone which all masons admire. It is easily worked. It is sometimes of a coarse and sometimes of a fine texture, according to the locality. Many masons think it is made of the petrified roes of fish. (You laugh, but several masons have told me this earnestly, and they call it the fishes-egg-stone.)

The roofs of Stamford are of brown stone, with a little reddish tinge in it—Colly Weston stone, split by wedges in the frosty weather, for it cannot be worked in the summer. You may find a few slate roofs, but they are few and far between. They are so incongruous that you have an instinctive feeling that the whole town is antagonistic to slate.

It has curiosity shops, winding streets, gables—no single main High-street, as in more modern towns, but several main streets, while even the little side streets have many surprising shops.

It is a busy town, too. They make ploughs, electric dynamos, and petroleum lamps. Two well-known church builders have their works here.

There are several churches—small churches, big churches, quaint churches—two with magnificent spires. And the houses—stone houses, Georgian houses of the best, imposing and beautiful.

There may be more beautiful stone-built towns than Stamford, and if I come across them I hope they will leave the same fragrant memory that Stamford always leaves in my mind.

J. H. KERNER-GREENWOOD.

The Building Trade and the Present Crisis.

SIR,—I am an optimist, but cannot say much that is cheerful about the building trade present or future. In my opinion it is highly dangerous to take on large contracts at the present ime. No notice is given of advances and they are serious; for instance, lead jumped up £7 in a day, redwood timber £5 per standard in a week or ten days. In certain districts many of the men are off to the front, and there is a scarcity. Then there is the question of finance—who can tell what is going to be the end of this position. After things are settled and we have "wopped" the Germ ns, the building trade will have a fillip, along with all other manufactures.

H Ilifield. W. NICHOLSON.

Architects Enlisting.

SIR,—Since your last issue recruiting for the Royal Engineers has stopped, but it may start again any day. This being the case, I am keeping a list of men who desire to join this corps, and I should welcome additional names, so that we may send up as big a draft as possible when recruiting restarts.

For those who cannot wait I have made arrangements for them to join the Infantry and to be kept together in one company.

ALAN POTTER
(Hon. Secretary
A.A. War Service Bureau).

[Photo: Elliott & Fry.

The late E. Ingress Bell, F.R.I.B.A.

THE LATE E. INGRESS BELL:

AN APPRECIATION.

By the death of E. Ingress Bell the world of architecture loses a distinguished ornament. Born over seventy-seven years ago, the son of an agent to a large estate, he was brought into contact with building matters from an early age.

Having passed the Civil Service Examination, he entered the Fortification Branch of the War Office located at the Horse Guards as a draughtsman, and there he remained until he was retired by age; during that time he was consulted by the Department on many matters architectural, and designed numerous buildings for them.

Several of his official chiefs employed him to design houses for them, and at Sheen and other places he built several residences as well as churches at Caterham and Guildford. He also designed the Boer War Memorial Archway at Chatham for the Royal Engineers, who made him an honorary member of their mess—a distinction which he much appreciated. All his work showed great delicacy and feeling and his clients became his friends.

About the year 1882 he was appointed Consulting Architect to the Crown Agents for the Colonies, and invited Aston Webb to collaborate with him. This led to their entering into the public competition for the Admiralty and War Offices, with the result that they were included in the second competition, a greatly-reduced building being finally erected by Messrs. Leeming & Leeming. They also competed, by invitation, for the Imperial Institute, and the Freemasons' Schools at Bushey, in neither of which competitions, however, were they successful. On the other hand, they won the open competition for the Victoria Law Courts, Birmingham, and the Christ's Hospital School, Horsham, both of which buildings they carried out.

Ingress Bell also erected, in collaboration with the same architect the Birmingham University, the Metropolitan Life Assurance Society's building in Moorgate-street, and the Royal United Service Institution in Whitehall, and many other smaller buildings.

He combined a highly artistic nature with a thoroughly practical accomplishment, and was a draughtsman second to none in his generation—very rapid and accurate; his perspective drawings of the Admiralty, Imperial Institute, and Law Courts designs are well known.

He was a Fellow of the Royal Institute of British Architects. He served on several of its Committees, and read some delightful papers full of literary merit before the Royal Institute of British Architects and the Architectural Association, though his retiring disposition disinclined him to enter largely into public life. A great reader, gifted with a retentive memory, his conversation was a delight to all who had the pleasure of meeting him, and his singularly sympathetic and genial nature attracted to him many friends.

Some four years ago he retired to Worthing with his family, and there he died, retaining all his faculties and interest in things to the end.

He leaves behind him a very sweet memory to all those who knew and loved him. R.I.P.

OBITUARY.

Mr. J. Lindsay.

The death occurred recently at his residence, No. 11, Moray-place, Strathbungo, of Mr. James Lindsay, architect, Glasgow. The deceased, who was a Vice-President of the Glasgow Institute of Architects, secured, in 1884, along with Mr. Malcolm Stark, a premium of £600 in the Admiralty and War Office competition for the Whitehall buildings. Some time afterwards he was successful in winning a premium for designs for the Sheffield Municipal Buildings. Mr. Lindsay successfully undertook the planning of many large buildings and business premises in Glasgow and other parts of the country, and at the time of his death he was engaged on the Nethertown Institute, Dunfermline, for the Dunfermline Carnegie Trust. He was a silver medallist of the Royal Institute of Architects. Mr. Lindsay was fifty-seven years of age.

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ILLUSTRATIONS.

Piranesi.

WE illustrate another of the Carceri Series of engravings.

Austrian Architecture.

WE give from an interesting portfolio of drawings which illustrate the little-known Baroque architecture of Austria and Bohemia these details. As we consider the subjects may interest many of our readers, we propose to reproduce a series of these plates in our subsequent issues.

Smaller Italian Palaces.

WE illustrate another plate from Letarouilly's "Édifices de Rome Moderne."

Garrioch Special School for Physically and Mentally Defective Children: for the School Board of Glasgow.

THIS is the first complete school of its kind to be erected in Scotland. It is built on an open site with all the classrooms having a southerly aspect.

Accommodation is provided for 200 cripple and eighty mentally defective children. The mentally defective classrooms are grouped on the upper floor and have separate entrances and playgrounds to the north of the school. In addition to the above-mentioned accommodation there are cloak-rooms, teachers'-rooms, nurse and doctors' department, waiting-room, surgical dressing-room, dressing-room, spray baths, plunge bath, and janitor's house. The chief feature of the school is the arrangement of the plan, which is after the sanitarium type, with an open verandah towards the south which serves as a corridor to the classrooms.

This verandah is shut off from the classrooms by means of sliding partitions. These partitions may be thrown open, thus extending the classroom across the verandah, and each extended classroom can be completely separated by cross partitions in the verandah. The cripples' entrances are so arranged that the ambulance can deposit the children at the cloak-room doors, or, if necessary, at any of the class-rooms. There are two large halls, centrally placed, for the purpose of dining, and the cripples' hall, together with the verandah, may on occasion be used for afternoon rest. The large playground to the south, for the cripple children's use only, is laid out more in the nature of a garden than the usual playground, and, in addition, some well-known creepers are growing on part of the school walls, the idea being to give to these more or less unfortunate children a healthy and pleasant school life.

The architects of the building are Messrs. Hutton & Taylor, A. and Licentiate R.I.B.A., 212, Bath-street, Glasgow.

New Buildings, Commercial Travellers' Schools, Pinner.

THESE buildings, in course of erection, will provide dormitory accommodation for thirty girls and forty-six boys. In addition to the dormitories there are the following:—Staircase hall, playrooms, nurses' rooms, storerooms, heating chamber, etc.

The central block is being erected as a memorial to the late Mr. Thomas Francis Blackwell, for many years President of the schools.

The elevations have plinths of Lawrence's red bricks with rough-cast above. The roofs are covered with Cooper & Sons' tiles; Portland stone is used for windows and doorways. The staircase and half timbering, etc., in central block and the gables of the wings are of English oak.

The casements and frames throughout are of stone, supplied by Messrs. Henry Hope & Sons; fireproof floors by the Kleine Syndicate; the sanitary fittings by Messrs. Twyfords; the heating apparatus and hot-water service by Messrs. James Slater & Co.

The buildings are being erected by Messrs. Dove Brothers, builders, of Islington.

The clerk of works is Mr. J. H. Sheldrick, of Acton. The foreman of works is Mr. C. Wheatley. The work is being carried out under the supervision of Mr. Thomas Batterbury, architect, of London.

COMPETITION NEWS.

It must be understood that the following paragraphs are printed as news, and not as advertisements; and that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.

The list of current Competitions is printed on page 280.

School Buildings, Douglas, Isle of Man.

In the competition for the school buildings to be erected at Douglas the assessor, Mr. E. R. Robson, F.S.A., of London, has placed first the plans and designs by Mr. Bottomley, of Leeds; second, those of Messrs. Appleyard & Quiggin, of Liverpool; and third, those of Mr. Percy Robinson, of Leeds.

Receiving Home for Children, Grimsby.

The Grimsby Board of Guardians recently invited competitive designs from architects for the new receiving home for children at the workhouse. From the designs submitted to them for their inspection, they have selected that of Mr. T. Waddingham, architect and surveyor, 89, Cleethorpe-road, who has accordingly been instructed to carry out the work for them. Mr. Waddingham resigned the position of Surveyor to the Hebden Bridge Urban District Council in June last in order to take up private practice in Grimsby.

MODERN FABLES—X.:

THE BANKERS OF BABYLON.

IN Babylonia, when Nebuchadnezzar reigned in succession to his forefathers, were many banks, which held stores of gold and fine silver, both that they might keep the wealth of the people in safety and also that they might gain profit for themselves thereby.

And even as drops of water which are small run towards one another and make larger drops, so did many of the small banks seek union, and were called in Babylon joint-stock, and great wealth lay in their coffers.

Now, the method of bankers was in the beginning in this wise. He who was called a banker was one of substance and discernment, and great courtesy displayed he to those who sought his presence. Much knowledge had he and cunning, and few were the secrets hidden from him. The talk of the city he knew, and his judgment of the probity and the ventures of those who sought his counsel exceeded the knowledge of those who did business in the streets of Babylon the famous.

So if one came to him with a story saying the ships which bore his spices had met with misfortune from the storms of the ocean, nor could he meet his creditors without shame unless he had of gold three-score talents, the banker, knowing the worth of the suppliant, and his resources, would, after thinking, even yield to him the talents, saving him from shame, so that the merchant could look his fellows squarely in their faces without beating his breast and putting ashes upon his head.

And the merchant saved from ruin would make effort and repay the banker the talents he had had, and more even for his trouble. So he acquired fortune, and his name was honoured in the city.

Now, as has been said, many of these banks were joined one to another, and became even the banks called joint-stock, and instead of the bankers who knew the people were appointed those of smaller knowledge whom men called managers. And those who had replaced the bankers made regulations even for the managers, who had even the headship without the ægis of the bankers, nor were their actions based on understanding, but on written rules.

At this time came grievous war even on Babylonia, and gold was wanted for the Army of the King; nor were his people able to do business with those who strove with them in the stricken field,

And in this plight came many to the banks called joint-stock and made a tale of their necessities; but the managers could not help their need, because of the regulations on their tablets, and much difficulty arose in the land, therefore, and many skilful enterprises came to naught.

But even as the lightning of heaven and the thunder which is its handmaid passeth away, so did those who drove the King's chariots and the great captains who shot arrows at the King's enemies bring their might to naught.

Then was Babylon made gay with flowers and fine hangings of scarlet, and incense was burnt in the public places. And a high place was made even for the King that he might witness the glory of his Army and count the captives it had taken, and great peace and prosperity descended on Babylon.

Then did the banks called joint-stock make offer unto those who dealt with them, saying, "Much gold will we lend ye, for no longer do our tablets make the loan thereof impossible."

But the people hardened their hearts, and spoke to them in this wise:—"Does man want fire in the summer or more meat after he has feasted? In our troubles we came to ye, but thy tablets permitted no succour. Now we will no longer place our wealth in thy coffers, but will instead ask the bankers whom we knew of old to serve us."

Thus it took place that the banks called joint-stock were deserted, and grass grew even between the marble of their halls; but the bankers rejoiced, for they and the people helped one another, and built up the greatness of Babylon.

Moral.—That which serveth a purpose shall survive, but the useless one ever buildeth his own tomb, and the tale of his days shall be short in the land.

FIFTY YEARS AGO.

The Railway Bridge at Blackfriars.

ON Tuesday evening last an engine, with a long train of carriages attached to it and weighted for the occasion, steamed from out of the London, Chatham, and Dover Railway station in Blackfriars-road, halfway across the new bridge towards the northern side. It is expected that another month will elapse before the whole of the way of the bridge will be ready for examination by the Government inspector, and the passenger station, to be called the "Ludgate Station," now building in Bridge-street, Blackfriars, will be ready for the public accommodation. On the same day mentioned above one of the workmen, whilst engaged under the arches for the railway bridge, fell over into the Thames, and, notwithstanding all the assistance from a citizen steamboat, the poor fellow was drowned.

[**** We give the above extract from the *Builder* of September 17, 1864.]

COMPETITION WITH GERMAN, AUSTRIAN, AND HUNGARIAN TRADE IN NEUTRAL MARKETS.

IN connection with the scheme which the Board of Trade have initiated for assisting British manufacturers and traders to take advantage of the opportunity afforded by the war for securing trade formerly in the hands of German or Austrian or Hungarian rivals, the following further information has been received by cable from H.M. Commercial Attaché in Japan:—

"Business is being very seriously hampered by international difficulties which have arisen. It is suggested that United Kingdom firms transacting business with Japan should consult exchange bankers with a view to having their shipments to the Far Eastern markets financed. The attitude of the Japanese banks is exceedingly cautious. Large Australian contracts for lead are being held up owing to difficulties of finance. As regards exports, copper shipments are at a standstill."

The British Ambassador at Rome has cabled as follows:—

"I am informed that the present moment would be a favourable one for a competent Italian commercial traveller or agent to go to Milan and obtain orders for goods hitherto supplied by Germany. Amongst such goods for which there would be a demand are carbons for arc lamps, magnesium, silica bricks, and special types of steel."

FROM THE CARCERI SERIES, PIRANESI.

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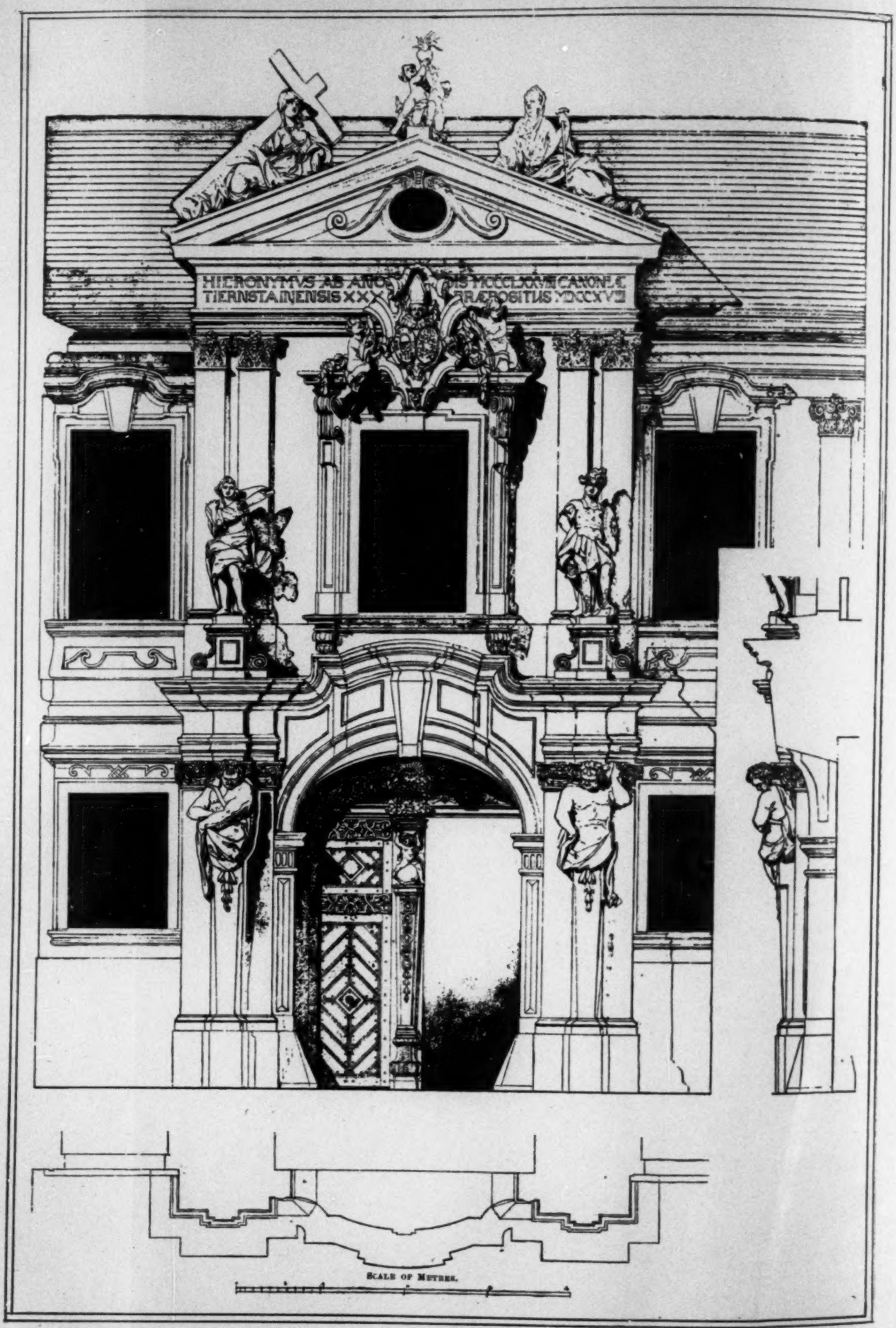
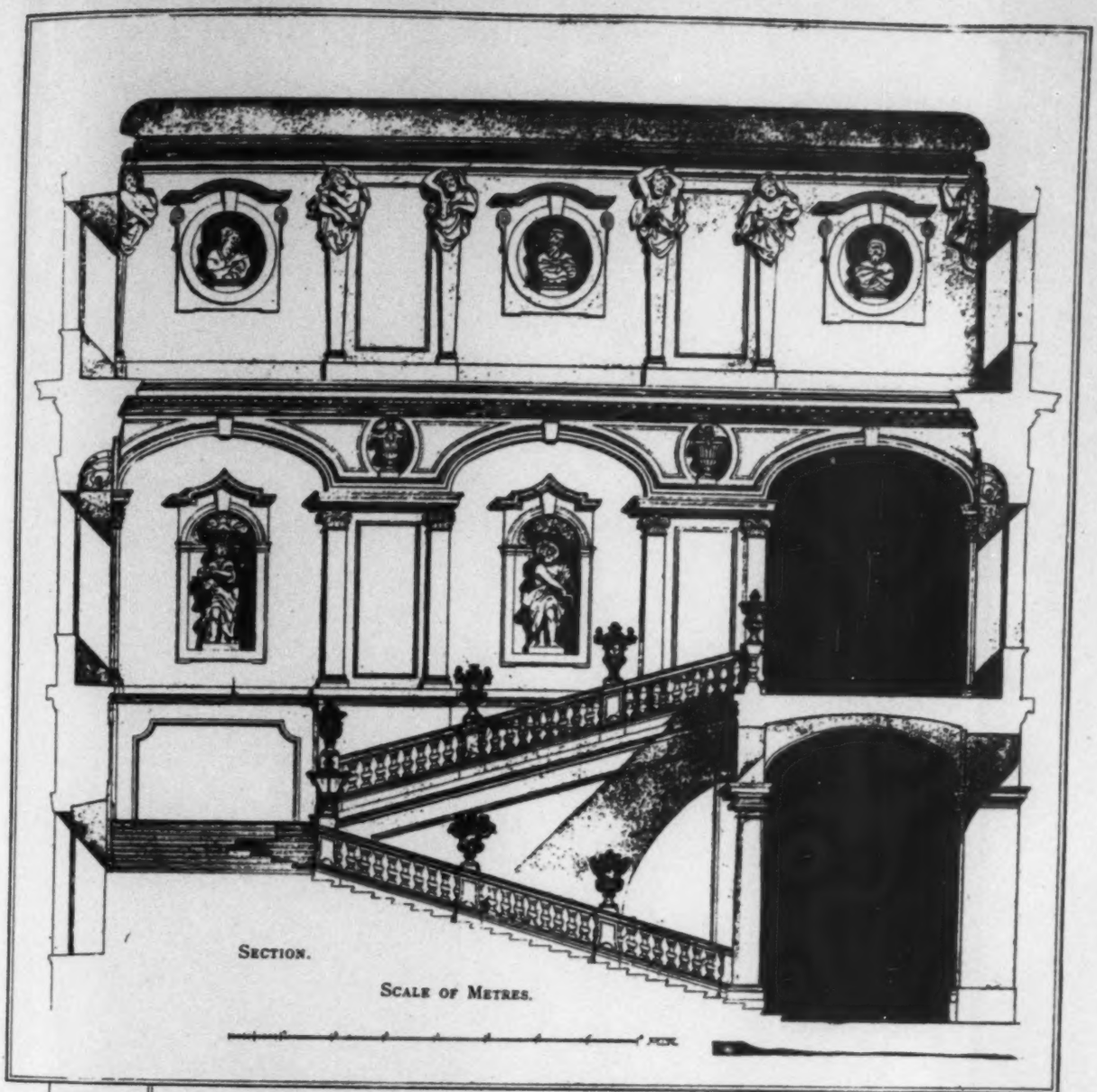
THE BUILDER, SEPTEMBER 18, 1914.

FROM THE CARCERI SERIES, PIRANESI.



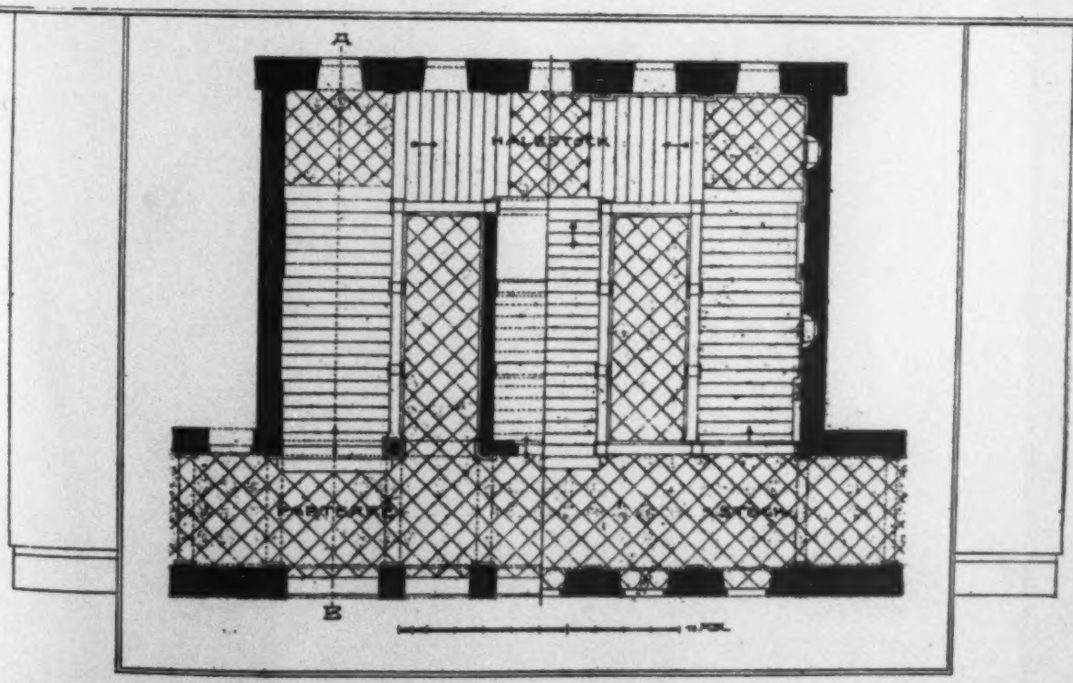
AUSTRIAN ARCHITECTURE.

HOUSE OF THE DUERNSTEIN FOUNDATION: MAIN ENTRANCE.



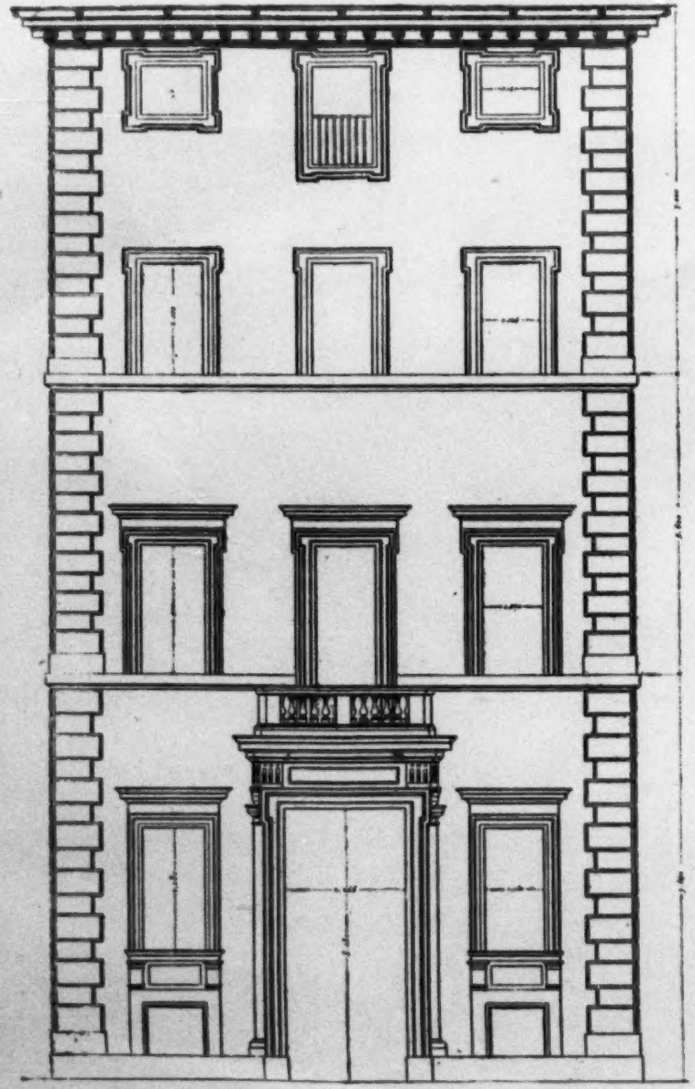
SECTION.

SCALE OF METRES.

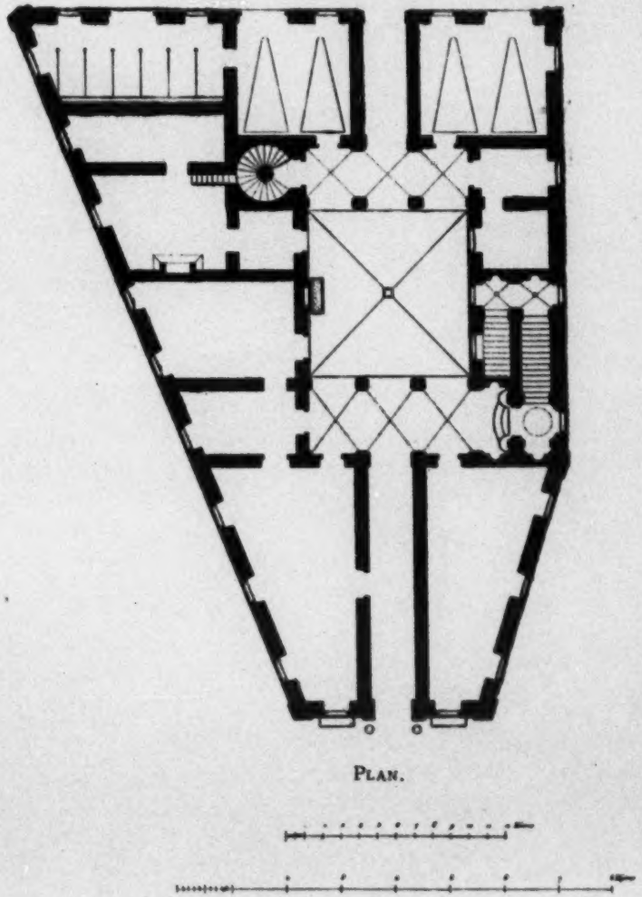


AUSTRIAN ARCHITECTURE.

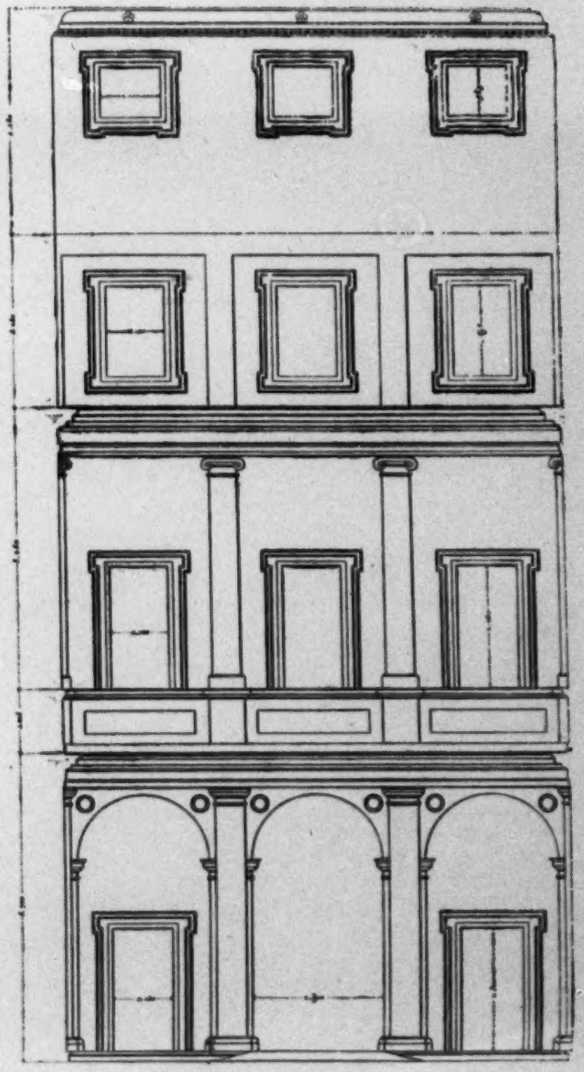
HOUSE OF THE GOTTWEIG FOUNDATION.



ELEVATION.



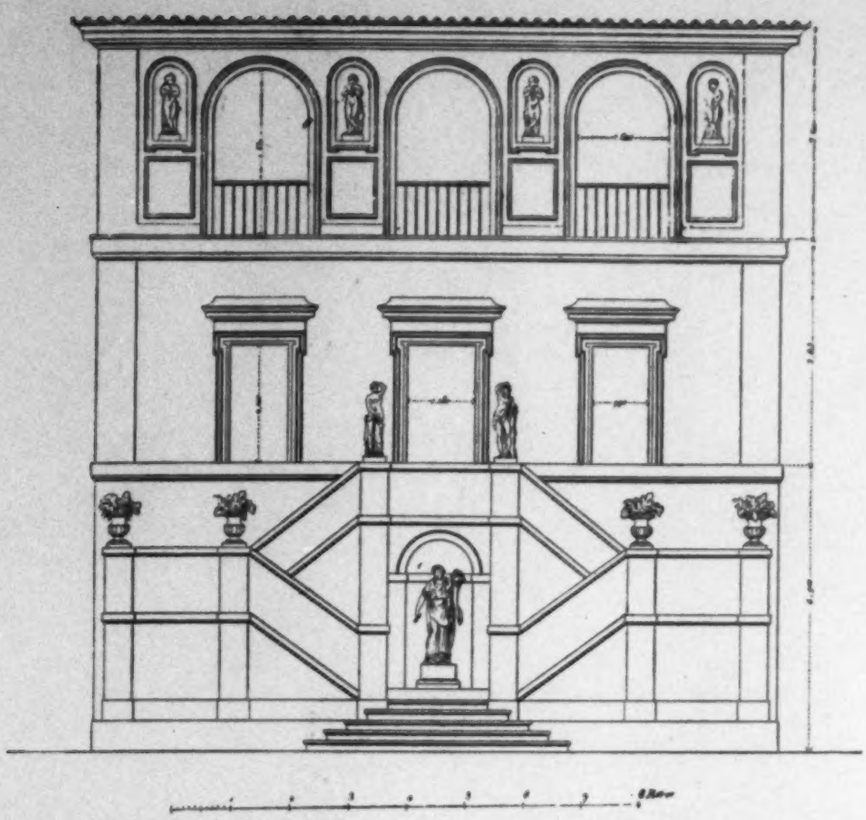
PLAN.



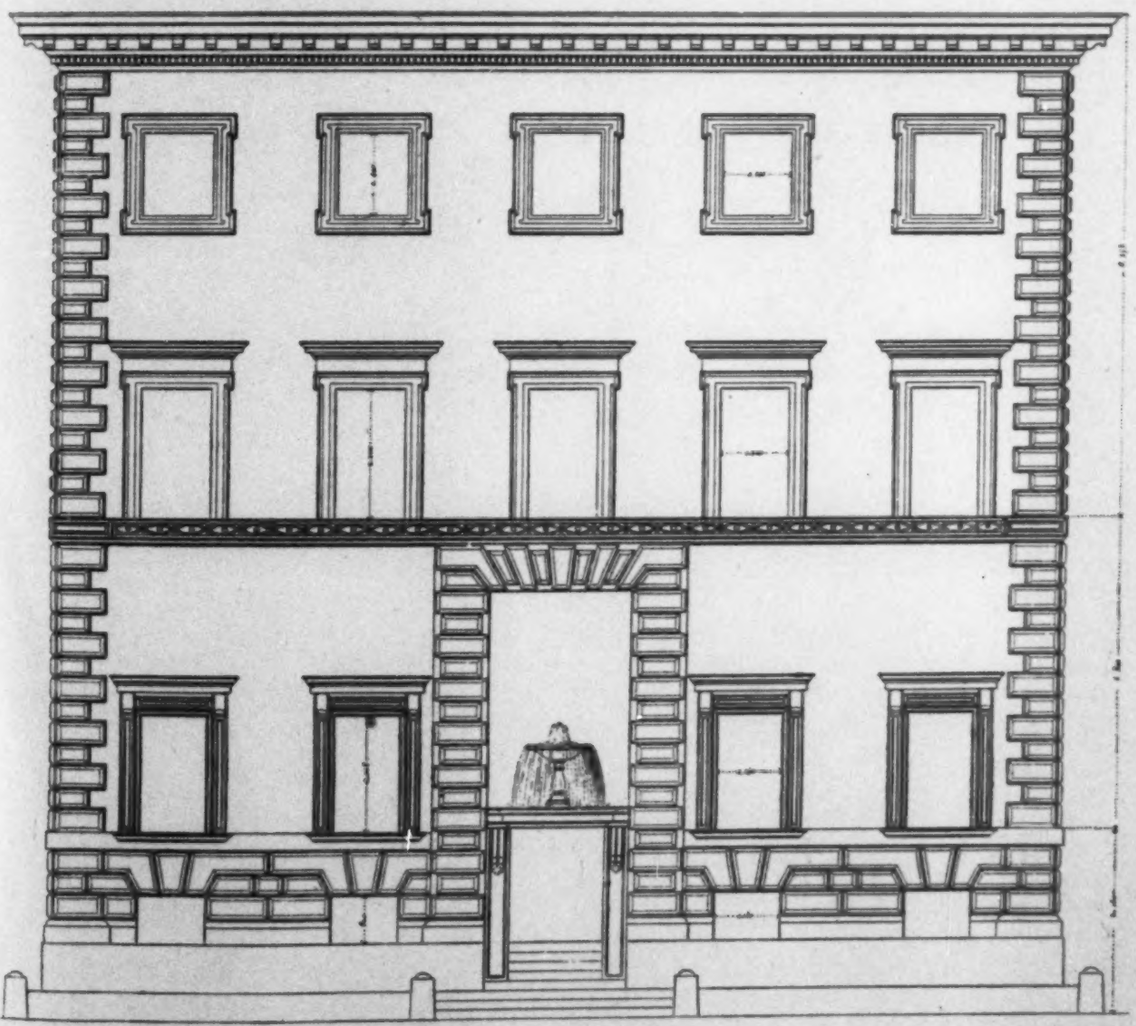
SECTION THROUGH COURTYARD.

PALAZZO PATROZZA (NEAR THE CHURCH OF S. CATARINA DE FUNARI).

(FROM "ÉDIFICES DE ROME MODERNE."—LETAROUILLY.)

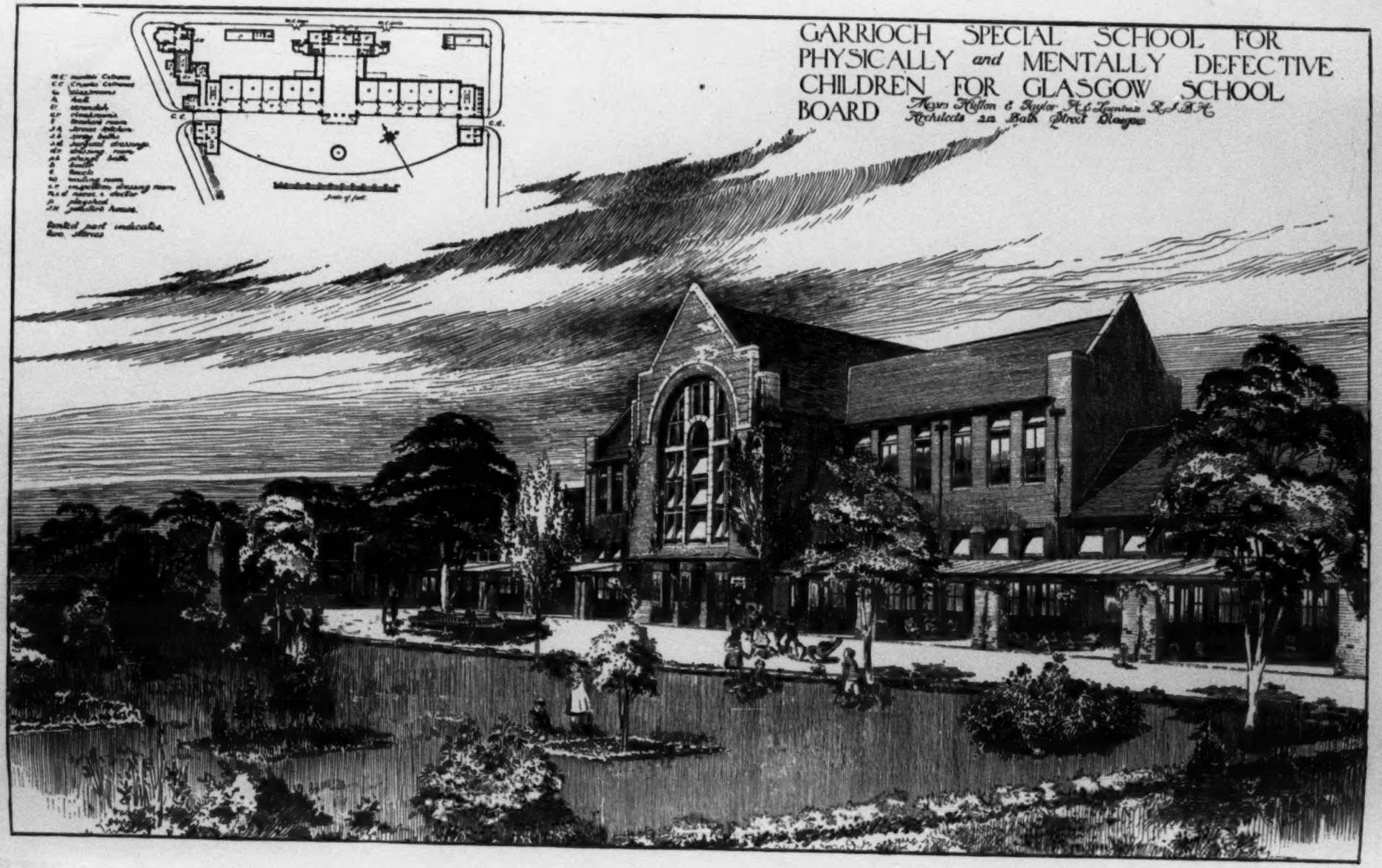


ELEVATION OF A HOUSE IN THE VIA DE S. GIOVANNI IN LATERANA.



ELEVATION OF A PALACE, PORTO DE REPETTA.

(FROM "EDIFICES DE ROME MODERNE."—LETAROUILLY.)


GARRIOCH SPECIAL SCHOOL FOR
PHYSICALLY and MENTALLY DEFECTIVE
CHILDREN FOR GLASGOW SCHOOL
BOARD
Messrs Hutton & Taylor A.L.Leathem R.A.I.B.A.
Architects 222 Bath Street Glasgow

SCHOOL FOR DEFECTIVE CHILDREN, GLASGOW.—Messrs. Hutton & Taylor, Architects.

·NEW BUILDINGS·
·COMMERCIAL TRAVELLERS' SCHOOLS
·PINNER · MIDDLESEX ·

·THOMAS BATTERBURY·
JAMES·WM·STONHOLD·
ARCHITECTS.
·BANK CHAMBERS·

CONSTRUCTION SECTION.

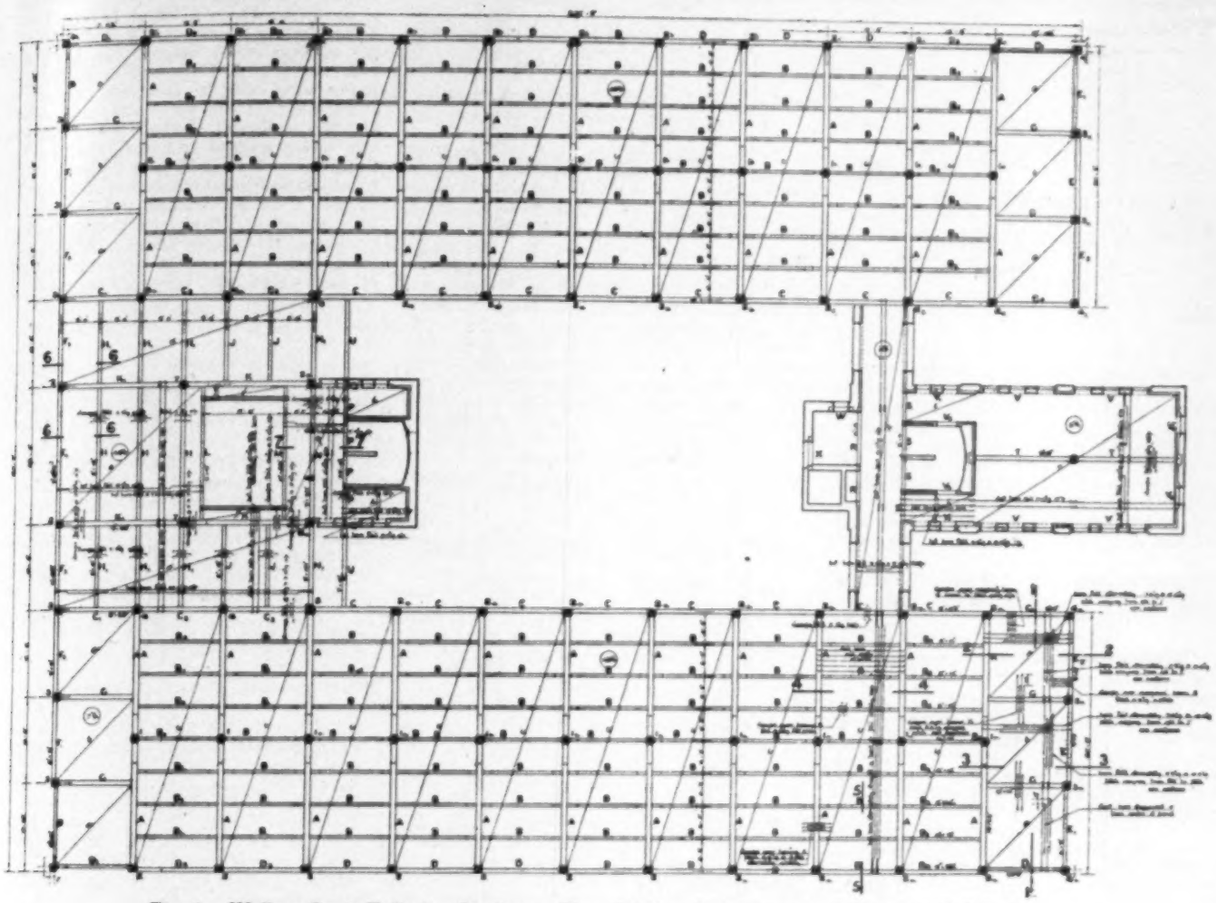


Fig. 1. Wallace-Scott Tailoring Institute: Plan showing Arrangement of Beams and Columns.

THE WALLACE-SCOTT TAILORING INSTITUTE, GLASGOW.

THESE new buildings have just been erected at Cathcart, Glasgow, and they provide a unique example wherein all the most modern improvements from the health and comfort standpoints of the employed have been incorporated. It is a very large undertaking, and the promoters, who have a world-wide reputation, realise that the best work is produced by those workers who are comfortable and contented, and the accommodation certainly leaves nothing to be desired. The site is a very suitable one, being on rising ground adjacent to the River Cart, and it is so extensive that recreation grounds are provided for the employees' use in which they can play football, cricket, tennis, and bowls during their spare time. The architects are Messrs. John Burnet & Son, of Glasgow, and the whole of the construction is executed in reinforced concrete on the "Considère" system from detail drawings prepared by the Considère Construction Company, of Victoria-street, Westminster.

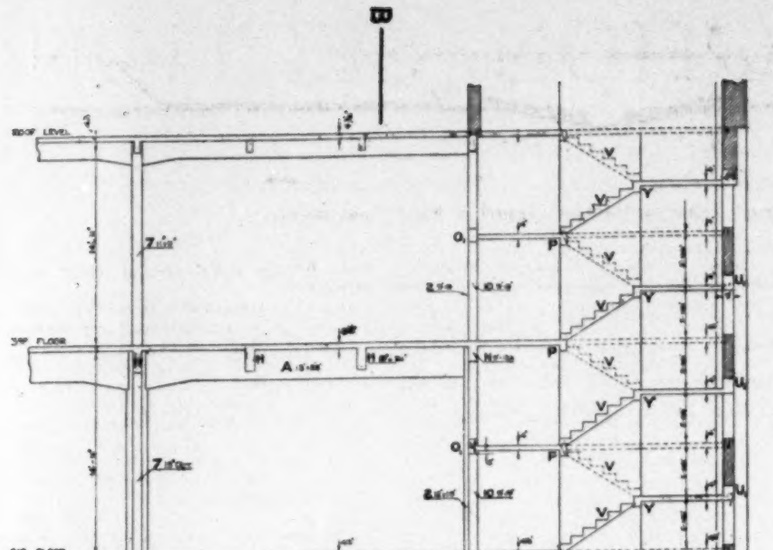
The main frontage is about 160 ft., and the plan is that of a right-angled U, with four floors in height, and the size of the building is such that to avoid interior divisions, which would have been detrimental to the working and supervision, a special application was necessary and the consent of the City Council obtained for exemption of the provisions of the Building Act.

The fact that the application was granted is due no doubt to the reason that the whole of the construction is practically fireproof and all the staircases are planned to come outside the main walls of the building, thus the fire risk is reduced to a minimum.

It is interesting to note that the contract forms an excellent example of the speed with which reinforced concrete construction can be executed when the work is systematically planned, detailed, and organised. The whole of the work was executed in seven months, under a penalty, and this is a remarkable achievement when the size of the building is considered. It was the minimum time required for the work if carried out in ordinary steel-framed construction, and as reinforced concrete was therefore just as expeditious while being considerably cheaper, steel-framed construction was abandoned. It is an actual example of the competition between these two methods of constructon which is being constantly met with at the present time, and it rather disposes of the argument, which is so prevalent, that reinforced concrete cannot be executed with the same speed as steelwork. The period allowed for the work dated from the time when the general drawings were approved, and after this all the details had to be prepared and materials delivered to the site before the actual building work could be commenced.

A good general idea of the plan and disposition of the building can be gathered from the drawing illustrated in Fig. 1, which shows the arrangement of the beams and columns at the first floor level. It will be seen that the two side wings have a width of 50 ft. each and they extend back from the main frontage line for a distance of over 200 ft. These two wings are kept practically clear for working purposes, and the lavatories, staircases, etc., are arranged to come between them together with connecting corridors. A part section is illustrated in Fig. 2, where the levels of the floors and staircases is indicated. The clear height of the floors between the slabs is generally about 15 ft., and the total height from the ground floor level to the roof is about 62 ft. The columns are arranged in three lines in each side wing, two of these lines being in the external walls, and only one in the interior of the building. The spacing is somewhat modified in the front block as required by the planning, as will be seen in the illustrations. The foundations to the columns are of seven different sizes and types according to the loads to be carried, and the largest of these is 8 ft. square and 2 ft. in thickness with a lattice of steel rods in the lower surface as reinforcement, and a smaller lattice in the upper surface with several stirrups to anchor the bars to the mass of the concrete as shown in the detail in Fig. 3. It will be seen that the column reinforcement is carried well down into the foundation, and the ends of the rods are bent out at right angles to the vertical. The reinforcing rods are bent over at the ends, as this provides excellent anchorage and prevents any possibility of the bars being even slightly drawn through lack of adhesion.

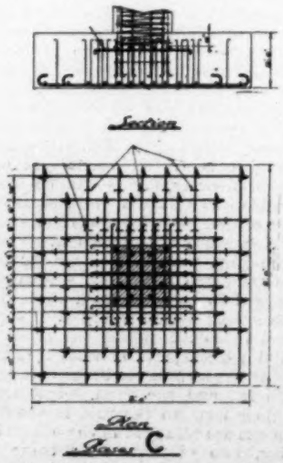
Upon looking at the plan already referred to in Fig. 1 it will be seen that with the central row of columns only in the interior of the wing buildings the spacing of the columns is about 25 ft. in this direction across the building, and the length of each wing is divided into twelve bays by columns at about 16 ft. 6 in. centres. The central rows of columns have therefore a considerable floor load to carry, and these are octagonal shaped on plan with a width of 22 in. between two opposite faces on the ground floor, with reinforcement consisting of twelve vertical rods, four of which are arranged to form a square inside the other eight, which are spaced in circular form around the outer circumference of the column. The inner set of rods are bound by links at 12 in. pitch, and the outer set by the spiral method according to the Considère patent system, which enormously increases the strength of the column. The spiral is carried down into the base for a distance of 6 in., and the columns from the ground floor level to the foundation are increased to a square having a length of side equal to 22 in. with four additional rods,



Section A-A

Fig. 2. Wallace-Scott Tailoring Institute: Part Section.

one of which is placed in each corner, and these additional rods are also tied with links. The columns which occur in the external walls are 26 in. square, and these are reinforced with sixteen vertical bars arranged in a similar manner to that mentioned above for the columns below the ground floor level. The largest interior columns occur in the centre of the front block, and these are 24 in. octagonal columns reinforced with twelve vertical bars bound with ties and spiral reinforcement as before described. The interior octagonal columns which have a size of 22 in. on the ground floor are reduced to 20 in. on the first floor and 15 in. on the second floor, with eight vertical rods only arranged around the circumference in a circular form, and these are again reduced to columns 9 in. square on the third floor with four vertical bars only. The wall columns are reduced to 17 in. by 15 in. on the first and second floors with eight vertical bars in the former case and six in the latter, and on the third floor a further reduction is made to 17 in. by 9 in. with four vertical bars only. All the bars are tied with links at 6 in. or 8 in. pitch with the ends bent round and carried well into the core of the column, except in cases where the bars are arranged in the form of a circle as in the octagonal columns where spiral binding is used. The heating chamber is provided by forming a basement under the lavatory block, which occurs between the two side wings at the back of the building and the basement is 13 ft. deep, with brick outer walls, and interior columns of reinforced concrete, one of which carries a large load due to the wall above and it is 28 in. square with a foundation slab 8 ft. square. In order to reduce the size of the beams at the ground floor level intermediate columns are introduced between the central row and the wall as there was no question of obstruction, and these are 12 in. square with eight vertical rods as reinforcement, and the introduction of these columns, by reducing the longitudinal bays to 12 ft. 6 in. wide,



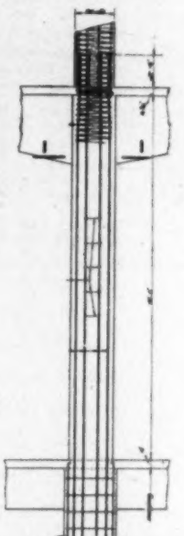
Section

Plan

Base C

Fig. 3. Wallace-Scott Tailoring Institute: Detail of Column Foundation.

whereas the width of the cross bays is 16 ft. 6 in., has the effect of causing the main beams to run parallel to the length of the side wings instead of across them as on the upper floors. A typical detail of a main beam at the first floor level is illustrated in Fig. 4, and this has a span of about 25 ft., and a depth of 30½ in. at the centre with a width of 13 in. Haunches 4 ft. long are formed at the intersection with the columns which increase the depth at this point to 38½ in. The section at the centre shows nine rods in the lower surface with stirrups carried well up into the slab at the top and the section at the ends shows six rods in the upper surface and three in the lower. Quite a good feature in beam design is provided by the introduction of two spirals in the lower surface of the haunches as will be seen in the illustrations, and these must have the effect of increasing the compressional resistance of this part, the beams being continuous over the columns whilst being supported only at the wall



Column No 1 to 6

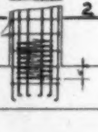


Fig. 4. Wallace-Scott Tailoring Institute: Typical Column Detail.

ends. Vertical stirrups are provided throughout the length, and the ends of all bars are hooked round to give additional anchorage. Each main beam supports the ends of six secondary beams, the latter being spaced at about 6 ft. centres and having a span of 16 ft. 8 in. These secondary beams have a depth of 18½ in. and a width of 6 in. with haunches 1 ft. 9 in. long at the point of junction with the main beams, which increases the depth to 22½ in. They are reinforced with four bars in the lower surface at the centre of the span and four bars in the upper and two in the lower at the ends where passing over the main beams. The bars in the upper surface are arranged to come over and in between the bars in the main beams, and stirrups are provided throughout the length. The beams at the ground floor level are similar but smaller, owing to the spans being less, but generally speaking all main beams which are of the continuous type are reinforced with spirals in the compressional area adjacent to the supporting member over which the beam passes. The slabs are generally 4½ in. thick with main reinforcing bars at 5½ in. centres, every alternate bar being bent up towards the end. At right angles to these main rods are distribution bars at about 16 in. centres, and continuity bars are provided in the upper surface of the slab over all beams. In some instances where the spacing

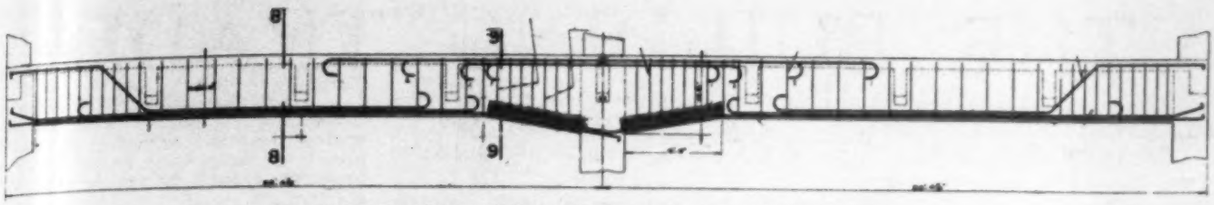


Fig. 5. Wallace-Scott Tailoring Institute: Detail of Main Floor Beam.

of the beams was varied and the size of the panels increased, as at the rear of the side wings, the thickness of slab required was 7 in., and here the reinforcement is in the form of a lattice of bars in the lower surface, these bars being in both directions and with a varying pitch from a minimum at the centre to a maximum at the support. The main roof is designed in a similar manner to the floors with smaller size beams and slabs only 3½ in. thick in consequence of the loads being less, and the roofs of the covered passages leading from one wing to the other are formed as curved roofs, having a radius of 7 ft. and a thickness of concrete of 4 in. reinforced with longitudinal and curved rods in the centre of the thickness.

The staircases are constructed with reinforced concrete with longitudinal and transverse bars in the soffite where there is a minimum thickness of 2 in. of concrete at the intersection of tread and riser, and one transverse bar is introduced into the nose of each tread with a cranked rod passing round this and being parallel to the face of the tread and riser back to the soffite.

The flights are finished at the top and bottom with small beams across the staircase well.

It was necessary to form a retaining wall around a portion of the site, and this was executed also in reinforced concrete together with a small bridge across the River Cart. The wall is about 13 ft. high, and it is formed with counterforts at 8 ft. centres with panels 5 in. thick between these. The panels have a batter of 1 in 12, and they are reinforced with horizontal and vertical bars in both surfaces. The foundation consists of a slab 6 in. thick arranged with a heel projecting about 4 ft. from the back of the slab and finished with a beam 16 in. deep and 6 in. wide and a small splayed toe having a projection of 9 in. The wall is finished at the top with a beam 12 in. wide and 6 in. deep, and the counterforts are 5 in. thick, and taper from the beam at the top to the extreme projection of the heel at the bottom. The wall is constructed with the minimum amount of material while being of ample strength to do the required work, and it is interesting to compare the section used with that required for a brick retaining wall of similar height.

The bridge over the river has a clear span of 60 ft. with a rise of 8 ft. and an overall width of 18 ft. It is of the open spandril type, with two arched ribs having a width of 18 in. and a minimum depth of 18 in. at the centre, increasing to 24 in. at the abutment. The reinforcement at the latter point consists of ten bars in both the upper and lower surfaces with stirrups at about 9 in. centres. Two intermediate struts, 9 in. by 9 in., are provided between the centre of the span and the abutment, over each rib, and these support 16-in. by 7-in. transverse beams, which are continued out beyond the struts as cantilevers. These transverse beams occur throughout the length of the bridge at 6 ft. 6 in. centres, and longitudinal beams 13 in. by 7 in. are provided over the arched ribs at the level of the decking, the latter being 6 in. thick, and reinforced in the lower surface with rods in both directions. The abutments are formed with large masses of plain concrete having a maximum width of 12 ft. The Contractors for the work were Messrs. Melville, Dundas, & Whitson, of Glasgow.

ALBERT LAKEMAN.

ENGINEERING STANDARDS COMMITTEE REPORTS:

BRITISH STANDARD SPECIFICATION FOR TWO AND THREE-PLATE CEILING ROSES.

THIS Report will be welcomed as a step forward by all interested in the production or use of electrical accessories, particularly now that considerable attention is being paid to the production of goods hitherto imported.

The preface to the Report explains that the standardisation of two and three pin plugs and other accessories is being proceeded with, but it was felt that the convenience of those concerned would best be met by issuing separate specifications so as to bring the standardisation into force as soon as possible, rather than by waiting until the whole of the work is accomplished and then publishing simultaneously a complete set of specifications.

The desirability, on the score of safety and convenience, of being able to replace easily a damaged fitting or cover cannot be disputed, and this, it is hoped, will be rendered possible by the adoption of this specification without unduly hampering the design of these fittings.

It is interesting to note that the Committee has had the cordial co-operation of the British Electrical and Allied Manufacturers' Association, so that these standards are likely to be generally adopted by the industry with considerable benefit to all.

This Report contains particulars of the material to be used, the dimensions of all the essential parts, the sizes and shape of the holes for the wires, and all other necessary details.

It is to be remarked that the Committee have specified that each terminal plate in the standard ceiling rose shall be of a different shape, and their reason for distinguishing the different terminal plates by form rather than by colour is given in a note to the specification.

Drawings showing the gauge necessary for both the two and the three-plate ceiling roses and a diagram illustrating the relative positions of the terminal plates in a three-plate ceiling rose are included.

The price of this Report is 5s. 2d., post free, and it may be obtained from any bookseller, or direct from the Offices of the Committee, 28, Victoria-street, Westminster. It is published for the Committee by Messrs. Crosby Lockwood & Son, Stationers' Hall-court, Ludgate-hill, E.C., and 5, Broadway, Westminster.

BRITISH STANDARD SPECIFICATION FOR COPPER-ALLOY THREE-PIECE UNIONS.

A Report has just been issued by the Committee on the Standardisation of Copper-Alloy Three-piece Unions, this being the sixty-sixth Report issued by the Committee. The consideration of the subject was taken up as a result of the request made by a Joint Committee appointed by the Institution of Heating and Ventilating Engineers and the National Association of Master Heating and Domestic Engineers.

The unions dealt with in the Report are designed to withstand steam pressures up to 125 lb. per square inch, and are intended for use with two of the tables (viz., Tables I. and II., Low and Medium Pressure Tubes) in the British Standard Specification for screwed copper tubes and their screw threads (primarily for domestic and similar work) Report No. 61. The unions are so designed that the same union can be used for tubes of the same nominal size in either of the above tables.

The Report is illustrated by several diagrams relating to assembled unions, the liner, the male screw piece, and the nut, and screw threads and test pieces are dealt with in the form of appendices. The Report appears to be very complete, and has been prepared with great care, and should for these reasons be very welcome.

The Report is published for the Committee by Messrs. Crosby Lockwood & Son, and the price is 5s. net.

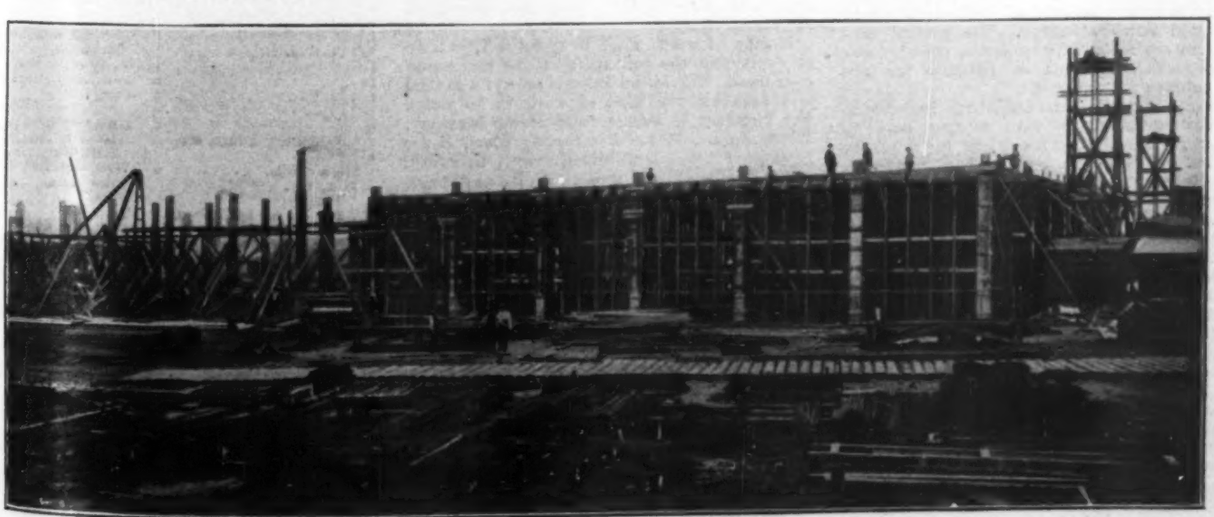


Fig. 6. Wallace-Scott Tailoring Institute: General View during Construction.

THE BUILDING TRADE.

BUILDING DEVELOPMENTS IN LONDON.—VIII.*

The Surrey Side of the Thames.

HITHERTO in this series no building work south of the Thames has been mentioned, but this part of London is no less important in the record of development. There is almost continuous evidence of building activity, and it includes every variety of work.

The most important building, both as regards size and site, is the new County Hall at the corner of Westminster Bridge and Belvedere-road, and with a magnificent frontage to the Thames. The contractors for the substructure, Messrs. Charles Wall, Ltd., have not been long free from their part of the building, and the chief evidences of progress are the numerous crane stagings of wood erected by the present contractors, Messrs. Holland & Hannen & Cubitt, Ltd., and the one of steel erected by Messrs. Anderson & Son, of Carnoustie. In carrying out the building Mr. Ralph Knott, whose designs were selected in competition, is acting with Mr. W. E. Riley, F.R.I.B.A., Superintending Architect to the London County Council, with Messrs. Whitaker, Hall, & Owen as consulting engineers. In due course the present site will be extended by the inclusion of the ground occupied by Messrs. Holloway Brothers, who will remove to Vauxhall Bridge.

Within a short distance of the County Hall there is much building work in progress in connection with the new Waterloo Station. The work here is indicated by the crane staging erected by Messrs. Skelton & Sons. The general contractors are Messrs. Perry & Co. (Bow), Ltd. The scheme for the improvement of Waterloo Station is estimated to cost about two millions, and when complete the work will have made a modern terminus equal to the demands of the travelling public. The London and South-Western Railway extended its lines from Nine Elms to the Waterloo-road in 1846, at the time of the "railway mania," and though the miscellaneous buildings were improved from time to time, and better platform accommodation was provided, it was not until the present century that the work of rebuilding on an ample scale was begun. It will be some years before the final touches can be given, and meanwhile there will be engineering and architectural problems to be solved by the professional staff of the company.

Stamford-street, at the Waterloo end, is being transformed. Once famous for its fashionable and notable residents (John Rennie lived there, for one), it became a dingy thoroughfare, and there was scope for improvement on the part of the Council of the Duchy of Cornwall H.M. Stationery Office is rapidly approaching completion, from the design of Mr. R. J. Allison, A.R.I.B.A., and it is one of the most notable reinforced-concrete structures in London. The method of construction, by means of gantries erected by Messrs. Drew-Bear, Perks, & Co., Ltd., was an interesting experiment, and attracted much attention. The general contractors are Messrs. Perry & Co. (Bow), Ltd., with Messrs. Mouchel & Partners for the Hennebique ferro-concrete.

Nearly opposite this important building is another destined to give a new note to Stamford-street. This is the printing works for Messrs. W. H. Smith & Son. The architect is Mr. C. Stanley Peach, F.R.I.B.A., the general contractors are Messrs. Holliday & Greenwood, Ltd., and the steelwork is by Messrs. Dorman, Long, & Co. The design was illustrated in the *Builder* last week.

In Gravel-lane, Southwark-street, business premises are being erected by Mr. C. Ansell from the plans of Messrs. Nevinson & Newton. Near London Bridge, in the Borough High-street, a block of offices is in course of erection by the General Building Company, with Mr. M. E. Collins, F.R.I.B.A., as architect. An extension to Messrs. Peek, Frean, & Co.'s factory at Bermondsey is being carried out by Messrs. Patman & Fotheringham, Ltd., and Messrs. Richard Moreland & Son, Ltd., under the direction of Mr. E. A. E. Woodrow, F.R.I.B.A.

(To be continued.)

* Continued from page 254.

COST ACCOUNTING ON CONSTRUCTION WORK.*

SECTION II.

The Code.

HAVING analysed the estimate, instructions are made out for the timekeeper in the form of a code, Forms 4, 5, and 6. This code is made up from the standard mnemonic code used by the author. The code differs from that used by other contractors only in the fact that the mnemonic principle is used instead of numbers, and that the divisions of time have been carried a good deal further than is usual. Although this does not seem to be an important item in itself, it is so because it simplifies the work of the timekeepers on the job to a very large extent, and ensures more accurate and intelligent reports being made from the job.

All contractors who have attempted any cost keeping will agree on the necessity for some sort of a code to report work done, not on the ground of secrecy but, to obtain concise, quick descriptions. It has been found that if timekeepers are simply told to report the work done and describe it, their descriptions will be misleading and verbose, and in going their rounds they will probably make up a code for themselves which afterwards they have to turn into a written description.

STANDARD TIMEKEEPING CODE.

MAIN DIVISION—Kinds of Work. SUBDIVISION—Kinds of Labour.

Initial Letter:

P	Plant.
D	Digging, earthwork and rockwork and items in connection.
M	Concrete.
F	Forms.
R	Reinforcement.
K	Finish of concrete surfaces.
C	Finish carpentry (windows, flooring, etc.) and any carpentry not belonging to P, D, or F.
S	Miscellaneous steel and iron work and other metal work.
B	Brick masonry, stonework, tile, Akron pipe etc.
Z	Miscellaneous.
X	Extra work (prefix to any of above).

Second Letter (for all main divisions except D and K):

a	Making or preparing, viz., making up forms, mixing concrete, bending or fabricating steel, etc.
e	Erecting, placing, or building, viz., erecting forms, placing concrete, laying brick, fixing sash, etc.
i	Removing, stripping, or cutting away, viz., stripping forms, cutting away concrete or brick, etc.
o	Repairing, viz., patching voids in concrete, repairing mixer, etc.
u	Receiving, unloading, piling, loading, etc., viz., receiving cement, sand, lumber, etc., unloading and storing same, unloading plant and reloading at close of job, etc.

Second Letter with D:

a	Excavate.
e	Backfill.
i	Pumping.
o	Grading.
u	Drilling and blasting.

Second Letter with K:

a	Picking.
e	Plastering.
i	Rubbing with carborundum.
o	Repairing, filling voids, cleaning floors, etc.
u	Granolithic finish laid integral with the slab
ua	Granolithic finish laid after concrete has set.
y	Cement wash

Form 4.

It may be worth while to spend a little time in explaining the principles of the mnemonic code used. The initial letter is always a capital and indicates the kind of work to be done. For instance, M stands for concrete Masonry, F for Forms, R for Reinforcing Steel, S for Structural Steel and miscellaneous ironwork, B for Brickwork, and so on. As far as possible the initial letters chosen are mnemonical, that is, they are the first letters of the items they represent. The second letter is always a vowel and indicates what is being done in the division of work which it is describing; "a" stands for making items before setting, and "e" stands for erecting or setting or fixing in place; "i" stands for stripping or removing or pulling down; "o" stands for repairing or patching; "u" is a general utility item standing for unloading and other similar items. It will be seen that these are mnemonic in that each vowel is the vowel sound of the word that it represents. The third letter, which is always a consonant, indicates mnemonically the place or part of the building in which the work is done, that is, "f" indicates floors, "c" "columns," "b" beams, "k" cornice, "l" lumber, "d" doors, and so on. As far as possible these are mnemonic, but it is not possible to make every item so, and some consonants have to be arbitrarily chosen to make out. As the standard code is the same on every job and is used simply with adaptations to meet the requirements of the work in hand, these arbitrary symbols are quickly learned. It will be noticed that the third letter has to be a different one in the case of items relating to plant.

STANDARD TIMEKEEPING CODE.

SUBDIVISIONS—Location of Work in the Building.

Third Letter (for all main divisions except P, S and C):	*Third Letter with C:*
b	c Column.
bc Belt course.	d Door.
c Columns.	df Door frame.
ch Column heads (mushroom).	dt Door trim.
ce Cinder concrete.	f Floor.
d Footings.	fb Floor beam.
dp Drain pipe (tile).	fs Floor screed.
f Floors.	fp Sub-floor plank.
fs Floor slabs.	ft Top floor maple.
fb Floor beams (beam construction).	g Gate.
fm Corrugated metal to slabs.	h Hardware.
g	ho Operating gear.
h Cellar or basement.	j
j	k Cornice.
k Cornice.	l Lumber.
l Lumber.	m Monitor or pent house.
m Monitor or pent house.	ms Monitor sash.
n Lintels.	n Lintels.
p Paving or sidewalk.	p Partition.
q	pl Platform.
r Rubbish.	r Roof.
s Stairs	rb Roof beam.
t	rp Roof plank
v Vault lights.	rt Roof truss.
w Walls.	s Stairs.
rw Retaining walls.	t
ws Window sill.	v
cw Curtain walls.	w
x Cement.	x
y Sand.	y
z Stone or gravel.	z Miscellaneous.

Form 5.

It should be an easy matter to revise this code to apply to any other sort of construction work, or to industrial work of any kind, bearing in mind the general principles on which it is framed.

Although at first sight it looks complicated, yet it has been found to be very simple in practice, and new timekeepers and superintendents very quickly pick up its essentials.

It has the advantage that if any work is done on the job which was not known of or contemplated when the original code was made out it is a simple matter to adapt the letters and make up a fresh code word for the new work. As a matter of precaution, we always require our timekeepers to give the explanation of a new code word whenever he makes one up, although

STANDARD TIMEKEEPING CODE.

SUBDIVISIONS—Location of Work in the Building.

Third Letter with S:	*Third Letter with P:*
b I-beams, channels, etc.	b Boiler.
c Columns.	c Crusher and elevator.
cb Column bases.	ch Chute.
d Doors.	d Derrick.
dg Door guards.	f
df Door frames.	g Locomotive, portable engine and boiler.
ds Door sills.	h Hoisting engine.
fl Flashing.	j
g	k
h	l Elevator tower, bucket and hoist.
j Bolts.	m Mixer and engine.
k Cornice.	n Temporary buildings.
l	p Pump.
m	q
n Lintels.	r Runways, staging, ladders and guard rails, etc.
p Pipe.	s Wood-working shop, saw bench, planes, etc.
q	t Tract.
r Railings, gratings, etc.	v
s Stairs.	w Water supply.
sr Stair rails.	x
sl Sleeves.	y
t Trusses.	z Miscellaneous
v Inserts for sprinklers, etc.	
w Windows.	
ws Window shutters.	
wg Window guards.	
x	
y	
z Miscellaneous.	

Form 6.

* Continued from page 256.

very often we can read them without such explanation, owing to our familiarity with the principles on which the code is based.

From the standard code as given above, a special code is written out in the head office for the job before the work is started, and from time to time additions are made from the office or by the job, to meet special items of work met with on the job; but all the main items of work, such as concrete in columns and floors, forms, and reinforcement, have the same code word at all times, for example.

M—Concrete.	Mix.	Place.	Fill Voids, Smooth up, Etc.
Footings	Mad	Med	Mod
Floors and Roof	Maf	Mef	Mof
Columns	Mac	Mec	Moc
Walls	Maw	Mew	Mow

F—Forms.	Make.	Erect.	Strip.
Footings	Fad	Fed	Fid
Floors and Roof	Faf	Fef	Fif
Columns	Fac	Fec	Fic
Walls	Faw	Few	Fiw

(*To be continued.*)

A CONTRACTOR'S VIEW OF THE SITUATION.

MR. HENRY HOLLOWAY, governing director of Messrs. Holloway Brothers, Ltd., Victoria Wharf, Belvedere-road, London, in an interview with a representative of the *Standard*, disagreed on the point that there was any difficulty in buying building material.

"There has been a slight increase in lead," he said, "but that is now recovering. There has also been an increase in the price of timber from the Baltic ports, but these increases are not so serious as to justify owners withholding contracts.

"As far as the cost of building is concerned," added Mr. Holloway, "the war has not seriously affected it. At any rate, labour is plentiful, and the advantages to be gained from a plentiful supply should more than compensate for any slight increase in the cost of materials. There is nothing from the point of view of cost to justify an owner from withholding contracts or shutting down existing work. The financial difficulty is far more serious. All building operations mean an expenditure of capital, and owners have to make arrangements to meet this expenditure. Speculative builders cannot proceed except when they are financed upon reasonable terms. Usually these builders get assistance from banks, insurance offices, friendly societies, or private capitalists. All these sources of financial assistance are practically closed down.

"The question now arises whether the Local Government Board, instead of advancing money through local authorities for building schemes, cannot be persuaded to extend assistance to firms of repute and to the owners of property to enable them to carry on the normal plan of development. The Government should have no difficulty in obtaining ample security. They might make loans by way of mortgage, and could readily obtain 4½ per cent., a rate which would give them a slight margin, sufficient to compensate for any loss that might be suffered in special cases. An advance of two-thirds on the value of the property, as is usual with ordinary trustees, would also give ample margin to cover losses and meet the ordinary requirements of builders and building owners. By dealing with the Local Government Board direct building firms and owners could get to work much more quickly than when acting through local authorities.

"Certain people have building estates which they would be glad to push forward. If in various localities the Local Government Board would pick out a few substantial firms and finance them on the lines suggested, much useful work could be put in hand and much distress avoided in the winter.

"With regard to work that was commenced before the war I will speak as a contractor as distinct from a speculator. This work is largely held back by the owners under the impression that it will be more costly to continue at the present time. This is quite a mistake. Let things go forward as usual, and it will be found in the end that not only has there been no loss, but that new buildings are opportunely ready for the serious work that peace will bring."

GARAGE, BALHAM, S.W.

New premises for the Allendale Garage Company have been erected at 278, Balham High-road. The architect was Mr. J. M. Kennard, A.R.I.B.A., Railway-approach, London Bridge, S.E., and the general contractors were Messrs. J. E. Whiter & Co., Newington Butts, S.E.

PROPOSED NEW BUILDINGS AND OTHER WORKS.*

In these lists care is taken to ensure the accuracy of the information given, but it may occasionally happen that, owing to building owners taking the responsibility of commencing work before plans are finally approved by the local authorities, "proposed" works, at the time of publication, have been actually commenced. Abbreviations:—T.C. for Town Council; U.D.C. for Urban District Council; R.D.C. for Rural District Council; E.C. for Education Committee; L.G.B. for Local Government Board; B.G. for Board of Guardians; L.C.C. for London County Council; B.C. for Borough Council; and P.C. for Parish Council.

ALDERSHOT.—Plans passed for a pair of villas in Eggar's-hill, for Mr. D. H. Lewis; two houses in Church-hill, for Mr. S. Harrison.

Amersham.—Plans passed by R.D.C.:—House, North Park-road, Chalfont St. Peter, Mr. H. Brown; house, Penn-road, Penn, Mr. M. F. Long; additions, etc., to house, Mill-lane, Great Missenden, Messrs. H. & A. Wright; bungalow, Ashley-green, Messrs. Bulley & Howard; house, Cock-perkins-lane, Amersham, Mr. W. Matthews; additions to vagrants' house at Amersham Workhouse. The R.D.C. have resolved to purchase land in Buck-lane, Amersham, for housing purposes, and have appointed Mr. T. Thurlow, of High Wycombe, as architect of the scheme.

Ashton-under-Lyne.—The L.G.B. has sanctioned the borrowing by T.C. of £42,000 for extensions to the electricity works, £14,000 for improvements at the sewage works, and £426 for alterations to the Textile School.

Atherstone.—The L.G.B. has consented to the U.D.C. borrowing £1,440 for the purchase of land on which it is proposed to erect sixty working-class houses.

Banbury.—Plans passed:—A new shop front at No. 4, Horse-fair, for Wrench's Garage Company; iron shed and cycle store, for Messrs. Henry Stone & Son, Ltd.; bungalow adjoining Broughton-road, for Mr. J. S. Kimberley.

Barrow-in-Furness.—Plans passed:—Dwelling-house in Abbey-road, for Mr. A. H. Taylor; dwelling-house in Park-drive, for Mr. J. J. Mullinder; six semi-detached houses in Roose-road, for Mr. S. Barnett.

Barry.—The Housing Committee have decided to purchase land in Victoria-road on which to erect twelve houses.

Blackburn.—The L.G.B. have held an inquiry into the application of the Corporation to borrow £35,200 for the purchase of property in King William-street for the purpose of street improvement.

Bowland.—The R.D.C. have decided to proceed with the erection of six cottages at Gisburn, for which application has been made to the L.G.B. for £1,400.

Bulkington.—A sewage scheme is about to be carried out for the parish of Bulkington, at a cost of £8,500.

Burnham (Somerset).—The U.D.C. have decided to apply for powers to borrow £2,900 for new sewerage works.

Caerphilly.—The L.G.B. has sanctioned the U.D.C. borrowing £2,853 to lay out recreation-grounds at Nelson, Abertridwr, and Taffs Well. The U.D.C. has decided to purchase 6 acres of land on the Grange Estate for housing.

Cannock.—Plans passed by U.D.C.:—House, Paddy's-lane, Cannock, for Mr. John Reynolds; two houses, Heath Gap-road, for Mr. A. Darrall; house, Burns-street, Chadsmoor, for Mrs. L. Smith; house, Burns-street, Chadsmoor, for Mr. A. Darrall; three houses, High Mount-street, Hednesford, for Mr. T. C. Longstaff; additions to house, No. 42, Green Heath-road, for Mrs. M. M. Evans; house, Burns-street, Chadsmoor, for Mrs. L. Smith; two houses, Hednesford-street, Cannock, for Mr. S. Lloyd; alterations to two cottages, Mill-street, Cannock, for Mrs. Wooding; two houses, Beech Tree-lane, Cannock, for Mr. Beedles.

Christchurch.—The B.G. have instructed Mr. H. Crawshaw to prepare a plan for a receiving home to be erected on the cottage homes' site, showing one entrance and one staircase only; and Mr. H. Broad has been instructed to prepare bills of quantities with respect to the proposed two new cottage homes.

Cleckheaton.—A L.G.B. inquiry has been held into the U.D.C.'s application to borrow £2,200 for the electricity works.

Coventry.—A L.G.B. inquiry has been held into the application of the T.C. to borrow £1,950 for the purchase of land for a public abattoir; and £2,450 for works of sewage and surface-water drainage, including works in the parish of Foleshill.

Crompton.—Twenty cottages at Provident Park for the Crompton Co-operative Society.

Croydon.—The T.C. have decided to apply to the L.G.B. for sanction to borrow £60,131 for road repairs.

Droyladen.—Five houses in Broadway for the Fairfield Tenants, Ltd.

Durham.—A plan of eight dwelling-houses to be erected at Wheatley Hill by Messrs. R. Gregory, W. Hunter, J. Welsh, and J. Ward has been approved by the R.D.C.

Eastbourne.—Plans passed:—Mrs. J. M. Forsey addition to Birklands, 36, Upperton-road; Mr. A. J. Bessant, detached house, Southfields-road; Southdown and East Grinstead Breweries, Ltd.: garage at New Hotel, South-street; Messrs. Miller & Selmes, eleven houses, Ringwood-road; Miss Potts, addition, The Links, Meads-road; Mr. W. A. Perkins, alteration to two houses, Royal-parade East; Messrs. Boots, Ltd., alteration, 14-16, Sussex-gardens; Mr. L. C. V. Wilkes, alteration, St. Cyprians, Summerdown-road; Mr. A. Avard, two houses, Mountney-road; Mr. E. J. Jellicoe, addition, Downs House, King Edward's-parade; Mr. W. Llewellyn, eight houses, Ringwood-road; Mr. L. P. Newman, two houses, Milton-road; Mr. P. Ellison, addition to Killarney, Redoubt-road; Mrs. Dunn, pair of houses, Ringwood-road.

Glasgow.—The Dean of Guild Court have granted a warrant to the Glasgow Provincial Committee for the Training of Teachers to erect a training college at Jordanhill. The college is estimated to cost over £200,000. The grounds purchased for the purposes of the college extend to about 60 acres, and include the mansion-house of Jordanhill. The college will have accommodation for 1,200 students, the demonstration school accommodation for 800 pupils as a primary and higher-grade school, with the additional accommodation necessary for students taking notes in each classroom, and the hostels will be capable of boarding 200 women students. The building will be of red sandstone, and the style is the Scottish Renaissance, a striking feature being two square towers.

Halstead.—Preliminary steps are to be taken by the U.D.C. with the view of erecting cottages in the town which could be let at about 4s. 6d. a week.

Heanor.—The magistrates have passed plans, submitted by the Notts and Derbyshire Tramways Company, for the erection, on land in Church-street, of a new licensed house in place of the Crown Inn, which was partially demolished some two years ago to make way for the construction of the tramways.

Hinckley.—The L.G.B. have held an inquiry into the U.D.C.'s application for sanction to borrow £1,065 for the construction of a new pumping main at the sewage-disposal works at Sketchley.

Hipperholme.—The U.D.C. have passed plans for thirty-six houses for Messrs. Brookes, Ltd.

Holsworthy.—The sanction of the L.G.B. has been received to the U.D.C. borrowing £1,400 for the purchase of land and erection of five workmen's cottages.

Houghton.—A plan of three more cottages at the Rescue Brigade Station in Hetton-lane has been approved.

Ilford.—The Road Board has promised £500 towards the rebuilding of Red Bridge, on the joint application of Ilford and Wanstead Councils.

Keighley.—The T.C. have approved plans of seven dwelling-houses in Dixon-street, Sutton Mill, for Mr. James Bairstow.

Kirkby.—Plans passed by U.D.C.:—Mr. M. Heathcote, three dwelling-houses, Prospect-street; Mr. E. Coleman, two dwelling-houses, Welbeck-street; Mr. C. W. Blackburn, two dwelling-houses, Welbeck-street; Mr. H. H. Blackburn, two dwelling-houses, Welbeck-street.

Ludlow.—Plans for a new parish hall at Culmington, submitted by Messrs. Alexander & Duncan, Leominster, have been passed.

Maidstone.—A L.G.B. inquiry has been held into the application of the T.C. to borrow £6,316 for electricity purposes, including the provision of office accommodation.

Marsden.—A L.G.B. inquiry has been held into the application of the U.D.C. to borrow £7,384 for sewage disposal.

Milnrow.—Plans passed for two houses at The Ashes for Messrs. Butterworth & Bottomley.

Newport, Mon.—The Harbour Board have decided on the widening of the swinging basin above the entrance to the new south lock, and for widening the channel of the river above the swinging basin to a little up-stream of Powder House Point, at an estimated cost of £6,000.

Poole.—Plans passed:—Mr. A. E. Hoare for Mr. H. G. Sanger, pair of dwelling-houses, Shillito-road; Mr. W. B. Chinchen, dwelling-house, Danecourt-road; Mr. J. Bracher for Mr. J. Barnes, dwelling-house, Cornelia-crescent; Mr. H. Kendall for Mr. S. H. Burgess, two shops and dwelling-houses, Haven-road; Messrs. W. P. Hayter & Sons, additions to dwelling-house, South Lodge, Eaton-road; Mr. E. Van Schepdael for the Rev. J. J. Carroll, alterations and additions to St. Joseph's Presbytery, Bournemouth-road.

Rochdale.—Alterations to houses in Wellfield-street, for the Rochdale and Manor Brewery; and shippons at Buckley Hall Farm, for Mr. J. D. N. Entwisle.

Rochester.—Plans approved:—Plans for house and shop, High-street, Strood Intrs, for Mr. G. Sammon; and for messroom, Willis-avenue, St. Margaret, for Messrs. Short Bros.

St. Annes.—The U.D.C. have agreed to make application to the L.G.B. for sanction to borrow £6,500 for the construction of open-air sea-water baths. They also approved a contract for the laying-out of a water and rock garden in the Ashton Gardens.

Shoeburyness.—The Surveyor of the U.D.C. has prepared plans for cottages, estimated to cost £200 per cottage, and they have been referred to the Buildings Committee.

Spennymore.—A plan has been passed for the erection of a new workmen's club and institute in Weardale-street.

Stamford.—The T.C. have approved plan for a bathroom at 10, St. Peter's-hill, and plans for alterations and extra drainage to St. John's and St. George's Schools.

Tavistock.—The R.D.C. have instructed the Sanitary Inspector, Mr. T. H. Harris, to prepare specifications for the Lydford drainage scheme.

Torquay.—A L.G.B. inquiry has been held into the application of the T.C. to borrow £16,000 for the electricity undertaking, £5,900 for the pavilion, and £500 for electrically illuminating the Princess Gardens.

Torrington.—Sanction for the borrowing of £11,000 by the T.C. for a housing scheme has been given by the L.G.B.

* See also our list of Competitions, Contracts, etc., on page 280.

RATES OF WAGES IN THE BUILDING TRADE.

THE following are the present rates of wages in the Building Trade in the principal towns of England and Wales. It must be understood that, while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur:—

——	Masons.	Bricklayers.	Carpenters, Joiners.	Plasterers.	Slaters.	Plumbers.	Painters.	Masons' Labourers.	Bricklayers' Labourers.	Plasterers' Labourers.
	d.	d.	d.	d.	d.	d.	d.	d.	d.	d.
Aberdare	9	—	9	9	—	9	7½	6½	6½	6½
Accrington	9½	9½	9	9	9	9	8	6	6	6
Altrincham	9½	10	10	10	9½	10	9	6½	6½	6½
Ashton-under-Lyne	10½	10½	10½	10½	9½	10	9	6	6	6
Barnsley	9½	9½	9½	9½	—	8½	8	6	6	6
Barrow-in-Furness	9½	10	9½	9½	9½	9	9	6	6	6
Barry	9½	9½	9½	10	—	9½	8	6	6	6
Bath	8½	8½	8½	8	8½	9	7½	6	6	6
Bedford	8	7½	7½	8½	7½	7½	8	5½	5½	5½
Birkenhead	11	11	11	11½	—	11	11	7	7	7
Birmingham	10	10	10	10½	11	9	10½	5½	5½	5½
Bishop Auckland	9	9	9	9	9	9½	9	5½	5½	5½
Blackburn	10	10½	10	9	9½	9½	9	5½	5½	5½
Blackpool	10½	9½	9½	9½	9½	9	9	6	6	6
Bolton	10	10½	10	10½	9½	10	9	6	6	6
Bournemouth	8½	8½	8½	8½	8½	8½	8	6–7	6–7	6–7
Bradford	10	10	9	9	9½	8½	8½	6	6	6
Bridgwater	6½	6½	6½	6½	6½	10	6	6–7	6–7	6–7
Brighton	8–9	8½	8½	8½	8½	10½	8½	6	6	6
Bristol	10	10	10	10	—	—	6	6	6	6
Burnley	9½	9½	9	9½	8½	10	7	6	6	6
Burton-on-Trent	9	9	9	9	9½	9	9½	6	6	6
Bury	10½	10½	10	9	9	9	8½	6	6	6
Cambridge	9	8½	8½	9	9	10	9	6½	6½	6½
Canterbury	8½	8	8	10	—	9	7	6	6	6
Cardiff	9½	9½	9½	9½	9½	8½–9	6½	6	6	6
Chatham	8	9	8	9	—	9½	8½	5½	5½	5½
Chelmsford	8	7½	8	9	9	9	7½	6	6	6
Cheltenham	8½	8½	8½	9	—	7½	8½	6½	6½	6½
Chester	9½	10	9½	8½	9½	8½	8½	6	6	6
Chesterfield	8½	9	8	8½	9	9½	8½	5½	5½	5½
Colchester	8	8½	8½	8	9	9	7½	5½	5½	5½
Coventry	9½	9½	9½	9	9½	9½	8	6½–7	6½–7	5–6½
Crewe	7	8	7½	9	9	8	8½	5½	5½	5½
Darlington	9½	9½	9	9	8	7½–8	8	6½	6½	6½
Derby	9½	9½	9	9	9½	9	8½	6	6	6
Doncaster	9½	9½	9	9	9	10	8	6½	6½	6½
Dudley	8½	8½	8½	8½	9	8½	8	6½	6½	6½
Durham	9	9	9	9	9½	9	7½	6	6	6
East Glamorgan and Monmouthshire Valleys	9	9	9	—	—	—	8	6½	6½	6½
Exeter	8	8½	8	8	8	7½	7–7½	5½	5½	5½
Folkestone	8½	8½	8½	8½	8½	8½	8	6	6	6
Gloucester	8	8½	8½	7½	8	8	8½	6	6	6
Grantham	8	8	8	7½–8	7½–8	9	8½	6	6	6
Grays	—	10	10	—	—	9	8	6	6	6
Grimsby	9	9	9	9	9	7½	6½	5½	5½	5½
Great Yarmouth	7½	7½	7½	9	7½	8½	6½	5	5	5
Halifax	9½	9½	9	9	8½	9	7	6½	6½	6½
Harrogate	9	9	9	9	—	9	8	6	6	6
Hartlepools	9	10	9½	10	8½	9	8½	6	6	6
Hastings	8½	8	8	8½	8½	9	8½	6	6	6
Hereford	8	8	7½	9	8	9	7	6½	6½	6½
Huddersfield	9½	9½	9	10	8½	9½	8½	6	6	6
Hull	10½	10	10	10	9	10	7	6½	6½	6½
Ipswich	8½	8½	9	10	8½	10	7–7½	5½	5½	5½
Lancaster	10	10	9	9	8½	10	8	6	6	6
Leamington Spa	9	9	9	9	9	10	8	6	6	6
Leeds	10	10	10	10	9½	10	8½	6	6	6
Leicester	9½	9½	10	10½	9	10	8½	6	6	6
Lincoln	9	9½	10	9	8	10	8½	6	6	6
Liverpool	11	11	11	11	11	11	8	6	6	6
Llanelly	9½	9½	8½	8½	8½	11	8½	6	6	6
London	11½	11½	11½	11½	11½	11	8½	6	6	6
Loughborough	9	8½	8½	9	8½	9	8	6	6	6
Luton	9½	8½	8½	8½	8½	9	8	6	6	6
Maidstone	9	9	9	9	9	9	8	6	6	6
Manchester	10	10½	10½	9	9	9	8½	6	6	6
Mansfield	8½	9	8½	9½	9½	11	8½	6	6	6
Merthyr Tydfil	9½	9½	9½	9½	9½	9½	8½	6	6	6
Middlesbrough	9	10	9½	10	10	10	8	6	6	6
Newcastle-on-Tyne	10	10	10	10	—	—	8½	6	6	6
Newport, Mon.	9½	9½	9½	10	10	10	8	6	6	6
Northampton	9	9	9	9½	10	10	8	6	6	6
Norwich	8	8½	8½	9	8½	9½	8½	6	6	6
Nottingham	10	10	10	10	8½	9	8	6	6	6
Oldham	10½	10½	10	10½	8½	9	8	6	6	6
Oxford	9	8½	8½	9	9	9	8	6	6	6
Plymouth	9	9	9	9	9	9	8	6	6	6
Pontypridd	9	9	8½	9½	9½	9	8	6	6	6
Portsmouth	9½	9½	9½	9½	9½	9½	8½	6	6	6
Preston	10½	10½	10	9½	9½	9½	8½	6	6	6
Reading	8½	9	9	9½	9½	9½	8½	6	6	6
Rochdale	10	10½	10	9	9	9	8½	6	6	6
Rochester	8	9	8½	9	8½	9	8	6	6	6
Rugby	8½	8½	9	9	9	9–10	8½	6	6	6
St. Albans	9	9	9	10	9½	9–10	8½	6	6	6
St. Helens	9	9½	10	9½	9½	9½	8½	6	6	6
Scarborough	8½	9	8½	9½	9½	9½	8½	6	6	6
Sheffield	10½	9½	9½	9½	9½	9½	8½	6	6	6
Shrewsbury	8½	8½	8½	9½	9½	9½	8½	6	6	6
Southampton	8½	9½	9	9	9	9	8½	6	6	6
Southend-on-Sea	9	9	9½	9½	9½	9½	8½	6	6	6
Southport	10	9½	9½	P'cework	9½	9½	8½	6	6	6
South Shields	10	10	10	10	10	10	8½	6	6	6
Stockport	10½	10	10	10½	9	10	8½	6	6	6
Stockton-on-Tees	9	10	9½	10	10	10	8½	6½	6½	6½
Stoke-on-Trent	9	9½	10	9	7½	8½	8½	6–7	6–7	6–7
Stroud	7½	7½	7½	7½	9½	8½	8½	6	6	6
Sunderland	10	10	10	10	8½	9	8½	6	6	6
Swansea	9	9	9	9	9	9	8½	6	6	6
Taunton	7	7	7	9	9	9	8½	6	6	6
Wakefield	9½	9½	8½	9	8½	9	8½	6	6	6
Walsall	9	8½	9	9½	8½	9	8½	6½	6½	6½
Warrington	8½	9½	9½	9½	8½	9	8½	6	6	6
West Bromwich	9½	9½	9½	9½	9	9	8½	6	6	6
Wigan	10	10½	9	9½	9	9	8½	6	6	6
Windsor	9	9	9½	9½	9	9	8½	6	6	6
Wolverhampton	9½	9½	9½	10	9	10	8½	6–6½	6–6½	6–6½
Worcester	8½	9	9½	10	9	8½	8½	6½	6½	6½
York	9½	9½	9	9	9	8½	8½	6½	6½	6½

The mason's rate given is for bankers; fixers usually ½d. per hour extra.

Whitby.—A plan by Messrs. R. A. Wilson & Sons, for a bag factory for Mr. W. Kirklan, of Newcastle, has been approved.

Windsor.—Plans passed:—Messrs. Boots, for alterations at 91, Peascod-street; Messrs. Barclay & Co., alterations to bank premises.

Woking.—The L.G.B. have sanctioned loans of £15,600 and £3,000 for works of purification, etc., at the sewage farm.

Wokingham.—The T.C. have decided to apply to the L.G.B. for sanction to borrow £1,600 to erect four pairs of cottages on the Barkham-road.

York.—Plans passed:—Mr. C. Walker, additions to four houses, Millfield-lane, Hull-road; Trustees, Monk Ward Conservative Club, club and steward's house, East-parade; Messrs. Rowntree & Co., Ltd., extensions to cream department, Haxby-road works; Messrs. Blackburn, Gilbertson, & Sherry, picture-house, Skeldergate; Mr. W. Hockley, workshop, 2, Kyme-street; Mr. W. C. Oliver, redrainage, 1 and 2, Milton-street; Messrs. Seymour & Rochester, redrainage, 31 and 32, Wellington-street; Messrs. J. Smith, Ltd., alterations to shop, 59, Lowther-street; De Burgh Bros., two houses, Chesnut-avenue; Mr. T. Belt, redrainage and water-closets, 27, 29, and 31, Blossom-street, and St. Mary's-court.

GENERAL BUILDING NEWS.

SHOP PREMISES, WANDSWORTH.

In connection with the widening of High-street, Wandsworth, new shop premises are in course of erection. The architect is Mr. W. H. Duffield, F.R.I.B.A., Cloak-chambers, Cloak-lane, Cannon-street, E.C., and the general contractors are Messrs. Mattock & Parsons, Gray's Inn-road, W.C.

ENGINEERING WORKS, LAMBETH-ROAD, S.E.

The foundations are being laid for extensive engineering works at 129-133, Lambeth-road, S.E., near Lambeth Palace. The building is for Messrs. W. Mackie & Co., electric light and power contractors, of Old-street, E.C. The architects are Messrs. Newman & Newman, St. Thomas's-chambers, Railway-approach, London Bridge, and the general contractor is Mr. Henry Kent, Beacon-road, Hither Green. The steelwork will be by Messrs. Redpath, Brown, & Co., Ltd., East Greenwich, S.E.

FACTORY, KING'S CROSS.

Building operations are in progress in Wicklow-street, King's Cross, for the Welsbach Light Company, Ltd., the work being an extension at the rear of Welsbach House, Gray's Inn-road. The architects are Messrs. Mark W. King & Sons, Holborn-viaduct, E.C., and the general contractors are Messrs. Todd & Newman, Stannard-street, Hackney, N.E. The steel construction, including the glazed roof, is by the Aston Construction Company, Eagle Wharf-road, Hoxton, N.

TRADE NEWS.

The following is the scheme adopted by the Aston Construction Company, Ltd., constructional engineers, for the assistance of the dependants of those of their employees who are at the front:—With the acquiescence of the men, a levy of 4d. in the pound is made on the wages bill; the company add to this a similar sum. Thus a fund is provided from which the Army pay is supplemented according to the need of each individual case. In addition a weekly sum is set aside for single men having no dependants as an encouragement to recruiting, such sum to be paid in a lump sum on their return to civil life. Employees will be reinstated on their return. The scheme, we are told, has done much to encourage recruiting, sixty-five men—representing about 15 per cent. of the total—having joined the colours.

Mr. Henry C. Stephens, manufacturer of ink, gum mucilage, typewriter ribbons and carbons, of Aldersgate-street, London, E.C., makes an interesting suggestion in a letter to this journal. He has cabled his customers abroad and advised all shipping agents with whom he deals that he will replace, free of cost, any consignments of Stephens' inks seized or destroyed by the enemy. As the buyer is thus indemnified against loss he will have reason to continue to purchase from this country. The suggestion, it is thought, should, if acted upon promptly, assist British manufacturers to maintain their foreign and Imperial trade and to keep their hands employed.

In connection with the new printing works at Stamford-street, S.E., which we illustrated in our last issue, the asphalt work is being carried out by Messrs. Claridge's Patent Asphalte Company, Ltd., 21, Surrey-street, Strand, W.C.

The Christ Church Schools, Dover, are being supplied with Shorland's warm-air ventilating patent Manchester grates by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

Under the direction of Mr. C. W. Bullen, Surveyor to the Norfolk Education Committee, Boyle's latest patent "air-pump" ventilators have been applied to the London-road School, Dereham.

Messrs. J. Tylor & Sons, Ltd., sanitary and hydraulic engineers, Belle Isle, York-road, N., are paying half wages to the families of all their married employees on active service, and are making weekly grants to the dependents of all single men similarly circumstanced. They will reinstate all who serve during the war when it is over.

We are informed that the bottom of the new bath at the Kendal Grammar School has been treated with the powder Pudlo (to make the cement waterproof), and that the architect reports a very excellent result.

The National Time Recorder Company, 5, Blackfriars-road, S.E., have just received a repeat order from Price's Patent Candle Company, Ltd., for thirty of their Model B patent check action time recorders. They have also recently supplied another repeat order for ten machines, and have completed an installation of thirteen of their time-recording machines in Russia, for the Vienna-Warsaw Railway.

Some hundreds of employees of the North British Rubber Company, Ltd., Edinburgh, have either been called out or have enlisted. The company have arranged to pay half wages to all married employees engaged on active service, and in the case of unmarried men with relatives depending on them the same allowance will be made. In addition, the company is keeping open the positions for its employees to return to at the end of the war. A training corps has been formed, and nearly 400 names have already been handed in. Mr. Alexander Johnston, general manager of the company, who has taken great interest in the formation of this corps, addressed a meeting of the men recently, urging them to obtain as many new members as possible, and promising his assistance and support.

The directors of the Associated Portland Cement Manufacturers (1900), Ltd., after providing £101,518 for depreciation, reserve, and sinking funds, recommend the payment of a final dividend on the 5½ per cent. preference shares to June 30 last, and that the sum of £151,570 be carried forward, as against £51,534 brought forward from the previous year.

Building Trade Section.

THE MORATORIUM.

THE Wholesale Traders' Association for the Hardware, Furnishing, and Metal Industries, Ltd., 26, Corporation-street, Birmingham, have issued a letter calling attention to the urgent importance of using every safeguard available to conduct trading as freely and at the same time as safely as possible. "The passing of the Moratorium Act," it is stated, "has opened a door for a certain class of trader to postpone payment of their debts, and it is in many cases unreasonable if the *term* of credit is extended, for the *amount* of credit to be also unduly increased. Some traders who have claimed the protection of the Act, no doubt finding further credit with their usual suppliers curtailed, will seek to obtain goods from houses who do not of necessity know that they have been postponing their payments under the terms of the Act, and it is most important to the trading community that they should have information on this point before them when deciding as to opening a new account. No public registry of those claiming the assistance of the Moratorium Act is yet in existence, and this Association asks for the mutual co-operation of its members in compiling such a list. We trust, therefore, that you will help us by forwarding us a list of your customers who have claimed the benefit of the Act."

TRADE CATALOGUE.

The Sturtevant Engineering Company, Ltd., 147, Queen Victoria-street, E.C., have issued a useful little catalogue (No. 1061) describing their system of drying. Numerous materials are dried by the "Sturtevant" drying plants, warm air circulation forming the basis of this system. By this method the temperature can be varied without affecting the volume of the air circulated; the humidity of the air supply can be varied by recirculating part of the moist air from the drying-room; and the volume of air circulated can be regulated by varying the speed of the fan, or with dampers. The system is clearly described and illustrated.

PATENTS.

APPLICATIONS PUBLISHED.*

11,134 of 1913.—Joseph Albert Hill: Road-sweeping machines.

13,881 of 1913.—Gardner Tufts Voorhees: Heating apparatus.

17,873 of 1913.—Lucien Paul Basset: Process and apparatus for the manufacture of cement or hydraulic lime.

17,998 of 1913.—Vereinigte Chemische Fabriken, Landau, Kreidl, Heller, & Co.: Opaqueing agents for the production of white enamels, and process for the manufacture of such opaqueing agents.

18,030 of 1913.—Charles Ernest Lefeaux: Door stops and the like.

18,229 of 1913.—Adolf Ohman: Method of and means for moulding concrete walls provided with air chambers.

18,635 of 1913.—H. R. Marsden, Ltd., and Neil Taylor: Plant for making tar macadam.

18,889 of 1913.—John Alston Hart: Heating and humidifying apparatus.

20,087 of 1913.—John Stratton and Ernest Alexander Claremont: Manufacture of glazing bars.

20,178 of 1913.—Theodore Clifford Evans: Locks.

20,442 of 1913.—Samuel Dunn: Stair-rods and the like.

20,473 of 1913.—John Patrie O'Donnell (Henry Ernest Needham): Apparatus employed in the manufacture of tiles.

21,050 of 1913.—Charles George Major, Percy Herbert Stevens, and Smith, Major, & Stevens, Ltd.: Electric locks for lift gates and doors.

21,856 of 1913.—Montague Brown Mountain and Francis Darell Walton: Roller shutters.

22,812 of 1913. Edmond Coignet: Reinforced cement structures.

23,061 of 1913.—Edward John Rawson Gardiner: Picks and pickaxes.

23,103 of 1913.—Raymond William Monk: Supporting brackets.

23,268 of 1913.—Charles Henry Freeman: Wood roofs.

23,278 of 1913.—James Anderson: Kitchen ranges.

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

THE PRICE OF GLASS.

WE have received the following letter from a correspondent:—

"We notice in your issue of August 21 a letter from Messrs. W. & T. Avery, Ltd., re "War Policy of Birmingham Employers."

At the foot of this letter there is an editorial note, giving the names of some Birmingham firms who are doing "all that is possible in the circumstances to place the public interest before their own."

If this is the case, we are at a loss to understand why certain glass manufacturers have considerably raised the price of their manufactures now that their Belgian competitors are for a time prevented from supplying the English markets.

In some instances the price charged by the merchants for certain glass has had to be more than doubled, and we should like to know if the glass manufacturers consider this as being in the "public interest."

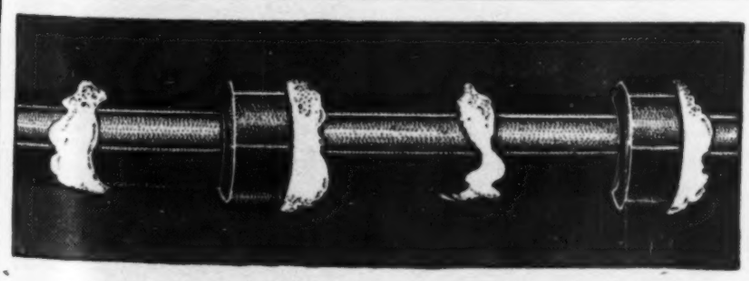
We might add that the glass manufacture is practically a monopoly. X. Y. Z."

BUILDERS AND CONTRACTS.

In the Parliamentary Papers Major Baring asked the Chancellor of the Exchequer what was the position of builders in reference to contracts entered into before the war; if, in view of the increased cost of material, they were bound to complete the work at a figure fixed before the war was contemplated; and whether the moratorium in any way affected their position.—Mr. Lloyd George, in reply, said that the moratorium in no way affects the contracts referred to, except so far as it postpones any payment due thereunder.

THE BRITISH ENGINEERS' ASSOCIATION.

We have received from the British Engineers' Association, 32, Victoria-street, Westminster, a copy of the second edition of their official directory of members, with classified list of their manufactures. This organisation has been formed with the object of overcoming the serious and growing obstacles which tell against the interests of British manufacturing engineers. Every *bonâ-fide* British manufacturer of engineering plant, etc., is entitled to join the Association, but no firm who has foreign interests likely to be detrimental to British engineering interests is admitted. The fact that a firm's name appears in this official directory is a guarantee of its standing as a British manufacturing concern.



Drain Repairing without Excavation.

BY the use of patented machinery we are able to make defective drains permanently watertight without incurring the expense and inconvenience of excavating.
The pipes are first chemically cleansed, and then liquid cement is forced into all cracks, fractures, and leaking joints.
All cement not actually used in filling in defects is removed, and the pipes are left with a clean, true bore.
The method is very inexpensive, and there are few cases where it cannot be applied with success.
Estimates are supplied free of charge, and if any job submitted to us cannot be repaired by our method we say so.

WE SPECIALISE IN ALL KINDS OF SANITARY WORK.

Reconstruction work or new drainage systems are carried out by us in a prompt and efficient manner. As we do nothing else but Sanitary Work our prices will be found in most cases to be lower than those of our competitors.

The Rapid Drain Repairing & Construction Co.,
STANHOPE TERRACE, GLOUCESTER GATE, LONDON, N.W.
Telephone: Mayfair 1629. Telegrams: "Ardeecomp, London."

List of Competitions, Contracts, etc.

For some contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this number: Competitions, —; Contracts, iv. vi. viii. x.; Public Appointments, xxi.; Auction Sale, xxiv. Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bona-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that may occur.**

Competitions.

SEPTEMBER 18.—**Glasgow.**—BUILDINGS.—The Corporation invite from architects competitive plans of buildings proposed to be erected at the north-west corner of Trongate and High-street. Premiums of £50, £30, and £25 respectively will be awarded to the authors of the designs adjudicated first, second, and third, in order of merit. Plan of the site, along with a copy of the terms and conditions of the competition, of Mr. J. Lindsay, Town Clerk, City-chambers, Glasgow. Deposit, £1 1s. See particulars in our issue of July 10.

OCTOBER 31.—**Adelaide, South Australia.**—LAYING-OUT SHOW GROUNDS.—Premiums, £500, £200, and £100. Secretary, Royal Agricultural and Horticultural Society of South Australia, 23, Waymouth-street, Adelaide, South Australia.

OCTOBER 31.—**St. Helens.**—POLICE BUILDINGS AND FIRE STATION.—The St. Helens C.B. invite competitive designs for the above buildings. Premiums, £100, £50, and £25. See advertisement in our issue of July 10.

JANUARY 15, 1915.—COLLEGE MEMORIAL LECTURE HALL.—Designs for the Alexander Thompson Travelling Studentship must be delivered by the above date. See advertisement in issue of January 30.

MARCH 31.—**Australia.**—FEDERAL PARLIAMENT HOUSE.—The Government of the Commonwealth of Australia invite designs for the Federal Parliament House at Canberra.

Contracts.

BUILDING AND PAINTING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 21.—**Blackburn.**—EXTENSION.—Extension of kitchen to the infirmary ward at the Workhouse. Quantities of Mr. J. H. Wilson, the Board's Architect, 4, King-street, Blackburn.

SEPTEMBER 21.—**Bolton-upon-Dearne.**—HOUSES.—Erection of thirty-four cottage houses in Wath-road, Bolton-upon-Dearne, for the Wath Main Colliery Company, Ltd. Names to Mr. J. E. Knight, architect, 11, Westgate, Rotherham. Deposit, £1 1s.

SEPTEMBER 21.—**Bridlington.**—HOUSES.—For bricklayers', joiners', and plumbers' work in connection with the erection of ten workmen's dwellings, for the Corporation. Specifications of Mr. E. R. Matthews, Borough Surveyor, Town Hall.

SEPTEMBER 21.—**Deeping Fen.**—HOUSE, ETC.—Erection of a house, and alterations to an existing house and buildings, at Gray's Farm, Deeping Fen, for the Small Holdings Committee of the Holland C.C. Quantities from Mr. E. J. A. Christie, County Land Agent, C.C. Offices, Sessions House, Boston.

SEPTEMBER 21.—**Farnborough.**—ALTERATIONS.—Additions, etc., to kitchen premises at the Town Hall for the U.D.C. Specifications of Mr. J. E. Hargreaves, Surveyor.

SEPTEMBER 21.—**Glossop.**—PAINTING.—For painting and decorating interior of Town Hall, etc. Specification at the police-station.

SEPTEMBER 21.—**Halifax.**—CLEANING.—For colour washing, etc., certain male and female wards, etc., at the Poor Law Hospital, for the Halifax Board of Guardians. Particulars of the Steward at the Hospital.

SEPTEMBER 21.—**Llandilofawr.**—BRIDGE.—Construction of bridge across the River Amman at a point nearly opposite the Pantyffynon Railway Station, for the Llandilofawr R.D.C. and Ammanford U.D.C. Specification of Mr. Evan Jones, Surveyor, Glancennen, Llandebie, and Mr. David Thomas, Surveyor, Quay-street, Ammanford.

SEPTEMBER 21.—**Machen.**—SHOPS.—Erection of two shop premises at Machen, Mon. Specifications of Mr. Philip J. Jones, architect, Church-street, Pontypridd.

SEPTEMBER 21.—**Sheffield.**—ALTERATIONS.—Alterations to old buildings for juniors' and infants' departments at Ellesmere-road Council School. Quantities of the City Architect, Town Hall, Sheffield.

SEPTEMBER 22.—**Dinas Mawddwy.**—REPAIRS.—For repairs to C.M. chapel. Specification at Chapel House.

SEPTEMBER 22.—**Doncaster.**—PAINTING.—For painting exterior of headmaster's house at the Grammar School. Specification of Mr. F. J. Clarke, Oriental-chambers, Doncaster.

SEPTEMBER 22.—**Hanley.**—ALTERATIONS.—For builder's work at 97, Moston-street, Hanley, for the Stoke-on-Trent B.G. Specifications at the Union Offices, Stoke.

SEPTEMBER 22.—**Keighley.**—ALTERATIONS.—Alterations to girls' cloakroom at Holycroft School. Particulars from the Borough Engineer.

SEPTEMBER 22.—**Macclesfield.**—IMPROVEMENTS.—Improvements to farm buildings (including an extension to the piggeries) at the Parkside Asylum, Macclesfield. Quantities of Mr. H. Beswick, F.R.I.B.A., County Architect, Newgate-street, Chester. Deposit, £1.

SEPTEMBER 22.—**Oldham.**—DWELLINGS.—Erection of firemen's dwellings in Chapel-street, for the Corporation. Quantities of Messrs. Winder & Taylor, architects, 61, Union-street, Oldham.

SEPTEMBER 22.—**Plymouth.**—PAINTING.—Painting of the internal corridors, staircases, etc., in the Workhouse Infirmary. Quantities of Mr. W. H. Davy, Clerk to the Guardians, Greenbank-road, Plymouth.

SEPTEMBER 22.—**Tewkesbury.**—BUILDINGS.—Erection of porter's lodge, engine-house, mortuary, and outbuildings at the Isolation Hospital, Tredington, near Tewkesbury, for the Tewkesbury Joint Hospital Board. Specification of Mr. J. Villar, architect, 5, Essex-place, Cheltenham.

SEPTEMBER 22.—**Wakefield.**—WALL.—Erection of boundary wall with iron railing in Park Lodge-lane for the Wakefield B.G. Quantities of Messrs. Simpson & Firth, architects, Southgate-chambers, Wakefield.

SEPTEMBER 22.—**Warrington.**—BRICKWORK.—Construction of brickwork settings for underfeed stokers at the Electricity Works. Specifications of Mr. F. V. L. Mathias, Borough Electrical Engineer, Howley, Warrington. Deposit, £1 1s.

SEPTEMBER 22.—**Wigan.**—PAINTING.—Painting of the tramway car sheds, Woodhouse-lane. Specification of Mr. A. T. Gooseman, Borough Engineer, Wigan.

SEPTEMBER 23.—**Abergavenny.**—DISINFECTING CHAMBER.—Erection of disinfecting chamber at the Monmouthshire Asylum, Abergavenny. Quantities of Messrs. Johnson, Richards, & Jones, architects, Abergavenny.

SEPTEMBER 23.—**Perranporth.**—HOME.—Erection of Dorrington Convalescent Home for Women, Perranporth. Mr. A. J. Cornelius, architect, Truro.

SEPTEMBER 23.—**Portsmouth.**—CONVENIENCES.—For construction of two conveniences at the Stamshaw swimming pond for the Corporation. Specifications of the Borough Engineer, Town Hall.

SEPTEMBER 23.—**Wrexham.**—HOUSES.—(1) Erection of twenty-two houses; and (2) construction of streets and sewers at Rhosllanerchrugog, for the Wrexham R.D.C. Specifications from Mr. J. Price Evans, Engineer to the Council, Argyle-chambers, Wrexham. Deposit, £2 each contract.

SEPTEMBER 24.—**Aberporth.**—SCHOOL.—Erecting a new Council school at Aberporth, for the Cardigan County Education Committee. Specification of Mr. G. Dickens-Lewis, County Architect, Aberystwyth.

SEPTEMBER 24.—**Ashford.**—ALTERATIONS.—Alterations and additions to the eight-bed isolation hospital, Warren-lane, Ashford, Kent, for the Ashford U.D.C. Specification, etc., of Mr. Wm. Terrill, Surveyor, 5, North-street, Ashford.

SEPTEMBER 24.—**Derby.**—PAINTING.—For painting two wards and part of outside buildings at the Derby County Asylum, Mickleover. Specifications of Mr. A. McWilliams, resident engineer.

SEPTEMBER 24.—**Ipswich.**—BUILDINGS.—Erection of certain buildings for public health purposes adjoining Elm-street, for the Corporation. Quantities of Mr. John R. Mead, Borough Engineer, Town Hall, Ipswich.

SEPTEMBER 24.—**Lambeth.**—REPAIRS, ETC.—Extending, repairing, and painting greenhouse and forcing frames, also for repairing and painting church, chapel, lodges, etc., at the Lambeth Cemetery, Blackshaw-road, Tooting, S.W. Specification of Mr. Henry Edwards, C.E., Borough Engineer, Lambeth Town Hall, Brixton-hill, S.W.

SEPTEMBER 24.—**Plymouth.**—PLASTERING.—Plastering the exterior of the southern wall of the offices and engine-room at the Electricity Works, Prince Rock. Specification of Mr. James Paton, Borough Engineer, Municipal Offices, Plymouth.

* SEPTEMBER 24.—**Tooting.**—EXTENDING, REPAIRING, ETC.—The Lambeth B.C. invite tenders for extending, repairing, and painting greenhouse and forcing frames, also for repairing and painting church, chapel, lodges, etc., at the cemetery.

SEPTEMBER 25.—**Barrow-under-Soar.**—ADDITIONS, ETC.—Alterations and additions at the Union Workhouse, for the Barrow-upon-Soar Board of Guardians. Quantities of Mr. C. H. Wright, The Green, Syston, Leicester.

SEPTEMBER 25.—**Belfast.**—BANK.—Erection of a new bank house in Warrenpoint, County Down, for the Directors of the Belfast Banking Company, Ltd. Quantities from Messrs. W. H. Stephens & Sons, Donegall-square North, Belfast. Deposit, £2 2s.

SEPTEMBER 25.—**Reading.**—PAINTING.—External painting at Park Hospital. Specification of Mr. John Bowen, A.M.Inst.C.E., Borough Engineer, Town Hall, Reading.

SEPTEMBER 25.—**Whitwood Mere.**—VARIOUS.—Erection of water-closet and alterations to urinals at the Council school, for the West Riding C.C. Specifications of Mr. W. E. Oxley, Education Offices, Castleford.

SEPTEMBER 26.—**Bromyard.**—COTTAGES.—Plans and specifications for a row of four cottages, to be erected in the Old-road, Bromyard, at a total cost of £600, for the Bromyard U.D.C. Mr. Albert Bush, Solicitor, Broad-street, Bromyard.

SEPTEMBER 26.—**Bury St. Edmunds.**—PAINTING.—For painting of sixteen houses in Fornham-road. Mr. S. F. Clark, 16, Orchard-street, Bury St. Edmunds.

SEPTEMBER 26.—**Kirkcaldy.**—SCHOOL.—Erection of Blairhill School, Dysart, for the Kirkcaldy and Dysart School Board. Architect, Mr. W. Williamson. Quantities of Mr. J. Gentles, surveyor, 47, Townsend-place, Kirkcaldy. Deposit, £1 1s.

SEPTEMBER 28.—**Richmond, Yorkshire.**—CATTLE MART.—Proposed cattle mart at Richmond, Yorks. Mr. Ernest C. Surtees, architect, Hall-street, Barnard Castle.

SEPTEMBER 28.—**Runcorn.**—DEPÔT.—Erection of a town depôt at Stone Croft, Top Locks, Runcorn, for the U.D.C. Quantities of the Surveyor, Mr. James Wilding, Town Hall, Runcorn. Deposit, £1 1s.

SEPTEMBER 28.—**Whitefield.**—ALTERATIONS.—Alterations to public offices at Whitefield. Quantities of Mr. George M. Denton, Engineer to the Council, Council Offices, Whitefield, Lancashire. Deposit, £1 1s.

SEPTEMBER 28.—**Whitefield.**—HOUSES.—Erection of fifty-eight houses, along with the laying of necessary sewers and road works, and all other incidental works in connection therewith, for the Whitefield U.D.C. Quantities of Mr. George M. Denton, Engineer, Council Offices, Whitefield, Lancashire. Deposit, £5 note.

SEPTEMBER 28.—**Whitefield.**—VENTILATION.—For the ventilating of the public offices, Elms-street, Whitefield. Quantities of Mr. George M. Denton, Engineer, Council Offices, Whitefield, Lancashire. Deposit, 10s. 6d.

SEPTEMBER 29.—**Cardiff.**—HOUSES.—Erection of 144 workmen's dwellings between Portmanmoor-road and Swansea-street, East Moors. Specification of the City Engineer, Mr. W. Harpur, M.Inst.C.E.

SEPTEMBER 29.—**Glasgow.**—CONCRETE FLOOR.—For the reinforced-concrete floor work required in connection with the extension of the Municipal Buildings. Plans of the architects, Messrs. Watson & Salmond, 242, West George-street, Glasgow, and schedules of Mr. J. Lindsay, Town Clerk, City Chambers, Glasgow. Deposit, £2 2s.

* SEPTEMBER 29.—**Harlesden.**—LABOUR EXCHANGE.—The Commissioners of H.M. Works invite tenders for adaptation of Harlesden Labour Exchange.

[Those with an asterisk (*) are advertised in this issue.]

BUILDING, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

SEPTEMBER 29.—**Somerset.**—BRIDGE.—Rebuilding of high bridge on the Taunton and Ilminster road at Capland, about 1¼ miles from Hatch Station, for the Somerset C.C. The drawings and quantities at the County Surveyor's Office, Wells. Deposit, £2 2s.

SEPTEMBER 29.—**South Mimms.**—DWELLINGS.—Erection of twelve cottages in South Mimms Lower Village for the South Mimms R.D.C. Specification from Mr. George Simcox, Surveyor to the Council, "Bearwood," Potters Bar.

SEPTEMBER 30.—**Chatham.**—PAINTING.—Painting, etc., at the cemetery, Maidstone-road, Chatham. Specifications at the Borough Surveyor's Office, Town Hall, Chatham.

SEPTEMBER 30.—**Dublin.**—REPAIRS, ETC.—For repairs and alterations to convert old laboratory into a gymnasium at Marlborough-street Training College, Dublin. Specifications of Mr. J. Franklin Fuller, architect, 179, Great Brunswick-street, Dublin.

SEPTEMBER 30.—**Mold.**—FIRE-STATION.—For erection of fire-station and caretaker's house in Earl-road, for the U.D.C. Quantities of Mr. J. D. Lewis, architect, Denbigh. Deposit, £2 2s.

* OCTOBER 6.—**Sevenoaks.**—SIXTEEN COTTAGES.—The Sevenoaks U.D.C. invite tenders for erection of sixteen cottages.

OCTOBER 9.—**Wakefield.**—ALTERATIONS.—For alterations to Ripon Coltsgate Hill Council School, for the West Riding E.C. Quantities of the Education Architect, County Hall, Wakefield. Deposit, £1.

OCTOBER 13.—**Sussex.**—SCHOOLS.—Erection of new elementary schools at Northchapel and Lower Beeding Colgate, alterations to the Lyminster Council School, and alterations to Littlehampton East-street Council School, for the West Sussex and Chichester Joint E.C. Application for quantities to be made previous to September 30 to Mr. Haydon P. Roberts, County Education Architect, Thurloe House, High-street, Worthing. Deposit, 10s. 6d. in the case of each set of quantities.

* OCTOBER 20.—**North Woolwich.**—ENGINE-HOUSE, ETC.—The L.C.C. invite tenders for the extension of the engine-house, boiler-house, coal-store, etc., and construction of two silt-pits, screening chambers, etc.

OCTOBER 23.—**Lincoln.**—ENLARGEMENT.—For the enlargement of Bracebridge Asylum, Lincoln, for the Committee of Visitors. Builders desirous of tendering should send their names by September 25 to Mr. Frederick Parker, Architect, The Square, Boston. Deposit, £5.

NO DATE.—**Ewell.**—DEMOLITION.—The Surrey E.C. invite tenders for taking down old farm buildings at West-street, Ewell, and removing the old materials. Particulars of the Surveyor, County Education Office, Penrhyn-road, Kingston-on-Thames.

FURNITURE, MATERIALS, etc.

SEPTEMBER 18.—**London.**—RADIATORS.—The Commissioners of his Majesty's Works, etc., invite tenders for the supply of radiators during a period of one year, from October 1, 1914. Forms of tender of the Controller of Supplies, 18, Queen Anne's-gate, Westminster, S.W.

SEPTEMBER 21.—**Stevenage.**—GRANITE.—Supply of 800 tons 1½-in. to 2-in., 1½-in. to 1¼-in., 1-in. to 1½-in. clean chippings and dust, broken Guernsey, Leicester, or other granite, for the Stevenage U.D.C. Mr. Wm. Onslow Times, Clerk to the Council, Orchard-road, Stevenage.

SEPTEMBER 22.—**Warrington.**—SUPPLIES.—Supply to the Warrington Union of ironmongery and electrical goods. No goods of German or Austrian origin will be accepted. Tender forms of Mr. Arthur Bottomley, Clerk, Union Offices, Bewsey-chambers, Warrington.

SEPTEMBER 23.—**Holborn.**—MATERIALS.—For supply of engineers' work, ironmongery, timber, etc., for the Holborn Board of Guardians. Forms of tender of Mr. H. G. Holden, Clerk, 53, Clerkenwell-road, E.C.

SEPTEMBER 23.—**Ramsgate.**—CEMENT.—Supply of Portland cement for twelve months. Form of tender of Mr. T. G. Taylor, Borough Engineer, Albion House, Ramsgate.

SEPTEMBER 24.—**Whitehaven.**—STORES.—Supply for six months to the Whitehaven Colliery Company, Ltd., of stores, materials, etc. Forms of tender of the Secretary, the Whitehaven Colliery Company, Ltd., 51, Duke-street, Whitehaven.

SEPTEMBER 30.—**Chiswick.**—SLOP VANS.—Supply to the U.D.C. of Chiswick of two slop vans. Forms of tender of Mr. E. Willis, A.M.Inst.C.E., Surveyor, Town Hall, Chiswick.

SEPTEMBER 30.—**Chiswick.**—MOTOR LORRY.—Supply to the U.D.C. of Chiswick of one three-ton petrol motor lorry, with detachable bodies and tanks, to carry house refuse and slop. Forms of tender of Mr. E. Willis, A.M.Inst.C.E., Surveyor, Town Hall, Chiswick.

OCTOBER 1.—**Normanton.**—FURNITURE.—For furnishing the extension at Aketon Hospital, for the Normanton and District Joint Isolation Hospital Committee. Form of tender of Mr. John W. Martin, Clerk, Council Offices, Normanton.

OCTOBER 1.—**Warwick.**—BUILDING MATERIALS.—For one year's supply of building materials to the Warwick County Lunatic Asylum, Hatton, near Warwick. Forms of tender at the Institution.

OCTOBER 3.—**Manchester.**—MATERIALS.—Supply to the Rivers Committee of graded slag, 46,000 cubic yds.; stoneware pipes, rest bends, 3 in. internal diameter, various quantities; stoneware covers, 2,150 lin. yds.; stoneware underdrainage tiles, 17,100 lin. yds. Forms of tender, etc., of the Secretary of the Rivers Department, Town Hall, Manchester

* OCTOBER 9.—**Tottenham.**—FENCING.—The Tottenham and Wood Green Burial Board invite tenders for fencing work.

ENGINEERING, IRON, AND STEEL.

SEPTEMBER 21.—**Aberdeen.**—IRON ROOF.—Construction and erection of the steel and corrugated iron roof of a single-story goods shed and relative works at Waterloo Quay. Quantities of Mr. R. Gordon Nicol, Harbour Engineer, Harbour Engineer's Office, Aberdeen.

SEPTEMBER 21.—**Law Junction.**—FOOTBRIDGE.—Providing and erection of a footbridge over the railway at Law Junction, for the Caledonian Railway Company. Schedule of the Company's Engineer, 302, Buchanan-street, Glasgow. Deposit, £2 2s.

SEPTEMBER 21.—**Plymouth.**—PALISADING.—Supply and fixing (if required) of ornamental wrought-iron palisading, to be erected upon the retaining wall forming the southern boundary of the site for workmen's homes at Prince Rock. Specifications of Mr. James Paton, Borough Engineer, Municipal Offices, Plymouth.

SEPTEMBER 22.—**Leeds.**—RAILINGS.—Supplying and fixing about 500 lin. yds. of 6-ft. wrought-iron railings and gates in connection with Calverley-street extension. Quantities of Mr. W. T. Lancashire, City Engineer, Leeds.

SEPTEMBER 24.—**Dorchester.**—CASTINGS.—Supply to the Corporation of castings. Forms of tender of the Borough Surveyor.

SEPTEMBER 24.—**India.**—STEEL BEAMS.—Supply of 130 tons mild steel beams, for His Highness the Nizam's Guaranteed State Railways Company, Ltd. Specifications of Mr. M. T. Walker, Secretary, Winchester House, Old Broad-street, E.C. Charge, 10s.

SEPTEMBER 24.—**India.**—RAILWAY MATERIAL.—Supply to the Great Indian Peninsula Railway Company of lamps and fittings, steel fishplates, steel fishbolts, etc., cast-iron chairs, crank axles, steel tyres. Specifications of Mr. R. H. Walpole, Secretary, Company's Offices, 48, Copthall-avenue, London, E.C.

SEPTEMBER 24.—**St. Pancras.**—BOILING PANS.—Supply and fixing of two boiling pans at the St. Pancras House, King's-road, N.W. Specification of Mr. J. E. P. Hall, Clerk to the Guardians, Town Hall, Pancras-road, N.W.

SEPTEMBER 24.—**Shoreditch.**—FENCING.—Supply and erection at Kenning-terrace, N., of about 100 yds. of wrought-iron unclimbable fencing, etc. Specification from Mr. T. L. Hustler, Borough Surveyor, Town Hall, Old-street, E.C. Deposit, £3.

SEPTEMBER 26.—**Stafford.**—CLOCK TOWER.—Supply and delivery of a cast-iron clock tower to be erected in the pleasure grounds. Particulars of Mr. W. Plant, Borough Engineer, Borough Hall, Stafford.

SEPTEMBER 28.—**Islington.**—ELECTRICAL INSTALLATION.—Electrical installation at the Giffard-street Elementary School, Caledonian-road, Islington, N., comprising about 215 wiring points and 265 lights. Specification from the Chief Engineer of the Council, Mr. M. G. W. Humphreys, at the County Hall, Spring-gardens, S.W. Deposit, £1.

SEPTEMBER 28.—**London.**—PUMP.—Erection, completion, and working of one steam turbine-driven centrifugal pump of approximately 600 h.p., together with surface condenser, etc., at the Battersea pumping-station of the Metropolitan Water Board. Specification at the offices of the Board, Savoy-court, Strand, London, W.C. Deposit, £1 1s.

SEPTEMBER 30.—**India.**—RAILS, ETC.—Supply to the South Indian Railway Company of:—(1) Steel rails, 41½ lb., and fishplates, about 1,790 tons; (2) screw spikes, No. 245,700; (3) bridge-work, about 50 tons; (4) steel bearing plates, about 31 tons. Specifications of Mr. V. E. de Broe, Company's Offices, 91, York-street, Westminster, S.W. Charge of £2 for No. 1, and of 10s. for each of remaining contracts.

OCTOBER 2.—**Eltham.**—RESERVOIR, ETC.—Construction of a service reservoir and other contingent works at Shooters Hill, Eltham, for the Metropolitan Water Board. Quantities from the Chief Engineer, Savoy-court, Strand, W.C. Deposit, £10.

OCTOBER 3.—**Ashford.**—IRON STANDARDS.—Supply and erection of 105 2½-in. iron standards, 5 ft. in height, at the Ashford Cattle Market. Specifications of Mr. Alfred J. Burrows, F.S.I., Surveyor, Ashford

OCTOBER 6.—**Manchester.**—TYRE-BORING MILL.—Supply of a car wheel tyre-boring mill. Specifications of Mr. J. M. McElroy, General Manager, Corporation Tramways, 55, Piccadilly, Manchester.

OCTOBER 26.—**Sydney.**—WET AIR FILTERS.—Supply and erection of wet air filters, for the Sydney (Australia) Municipal Council. Specifications for inspection at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NO DATE.—**Salford.**—LAMPS.—The Salford Corporation invite tenders for the supply of high-pressure gas lamps. Particulars from the Lighting Superintendent, Wilburn-street, Salford.

NO DATE.—**Scunthorpe.**—RAILWAY.—Construction of new roadway and railway branch line, with necessary drainage; also water pipe line. Specification of the Frodingham Iron and Steel Company, Ltd., Scunthorpe, Lincolnshire.

ROAD, SANITARY, AND WATER WORKS.

SEPTEMBER 22.—**Andover.**—STREET WORKS.—For kerbing, etc., in Junction and Weyhill roads, for the Corporation. Specifications of Mr. R. W. Knapp, Borough Surveyor, Town Hall, Andover. Deposit, £2 2s.

SEPTEMBER 23.—**Enfield.**—STREET WORKS.—For making up Waverley-road, Crescent-road, and Old Park-road, for the Enfield U.D.C. Specifications of Mr. R. Collins, Surveyor, Public Offices, Enfield.

SEPTEMBER 23.—**Macclesfield.**—SEWER.—Laying a surface-water sewer in Coronation-street. Quantities at the office of the Borough Surveyor.

SEPTEMBER 26.—**Dorking.**—STREET WORKS.—Making up the footpaths of Knoll-road, length about 1,300 lin. ft., for the Dorking U.D.C. Quantities of Mr. W. A. Clegg, C.E., Council Offices, Dorking.

SEPTEMBER 28.—**Chester.**—WATER MAIN.—Extension of a water main in the parish of Dunham-on-the-Hill, near Chester, consisting of about 1,237 yds. of 3-in. cast-iron pipes, including valves, etc., for the Chester R.D.C. Quantities from Mr. C. J. F. Owen, 10, Batchelors-lane, Dee Banks, Chester. Deposit, 10s. 6d.

SEPTEMBER 28.—**Runcorn.**—STREET WORKS.—Making with tarred macadam of certain streets and passages in the parish of Walton Inferior, for the R.D.C. of Runcorn. Quantities of Mr. Robert Garnett, Bold-street-chambers, Warrington. Deposit, 10s. 6d.

SEPTEMBER 28.—**Stratford-on-Avon.**—DRAINS.—(1) Laying and jointing 2,934 yds. of 6-in. stoneware drains; (2) laying and jointing iron pipe drains; (3) construction of twenty-four manholes; (4) various flushing works and apparatus. Specifications of Mr. R. Dixon, Borough Surveyor, Stratford-on-Avon.

SEPTEMBER 28.—**Uckfield.**—SEWERAGE WORKS.—(1) Supplying and laying 1,648-ft. run of stoneware pipe sewer, with manholes, etc., in Framfield-road; (2) supplying and laying about 1,433-ft. run of 6-in. stoneware sewer, etc., from North-row to Church-street, for the Uckfield U.D.C. Quantities of Mr. W. H. Overton, Engineer, 22, Ship-street, Brighton. Deposit, £1.

SEPTEMBER 28.—**Whitefield.**—SEWAGE PLANT.—Construction and erection of electric motors, centrifugal pumps, sewage ejector, and all necessary work incidental thereto at their sewage-disposal works, Whitefield. Quantities of Mr. George M. Denton, Engineer, Council Offices, Whitefield, Lancashire. Deposit, £1 1s.

SEPTEMBER 28.—**Wigan.**—PAVING.—For paving with granite setts of portion of Wallgate, Wigan. Quantities from Mr. A. T. Gooseman, Borough Engineer, Wigan. Deposit, £1 1s.

SEPTEMBER 29.—**Barnet.**—ROADS.—Construction of new roads on housing estate, approximately 4,800 sq. yds., together with about 1,000-ft. run of sewers, for the Barnet U.D.C. Specification at the Surveyor's Office, No. 40, High-street, Barnet.

SEPTEMBER 30.—**Bathgate.**—MACADAMISING.—Macadamising playground at Public School, Armadale, for the Bathgate Landward School Board. Particulars of the Rev. W. Grant Kirk, Armadale.

SEPTEMBER 30.—**Chiswick.**—CULVERT.—Construction of a brick and concrete culvert along the Duke's Ditch at Edenson-road, Chiswick. Forms of tender of Mr. E. Willis, A.M.Inst.C.E., Surveyor, Town Hall, Chiswick.

SEPTEMBER 30.—**Glasgow.**—SLUDGE PLANT.—Supply and erection of the automatic pneumatic sludge ejector plant required at Dalmarnock Sewage Works. Specifications of Mr. Thomas Melvin, Manager, Sewage Department, 72, Ingram-street, Glasgow.

SEPTEMBER 30.—**Thornhill.**—WATERWORKS.—Supplying and laying about 2¼ miles of cast-iron and steel pipes varying from 3 in. to 6 in. diameter, and for the construction of intake works upon the Kello water and of a filter-house, for the Thornhill District Committee. Quantities of the Engineers, Messrs. Crouch, Hogg, & Easton, C.E., 14, Blythswood-square, Glasgow. Deposit, £1 1s.

SEPTEMBER 30.—**Wood Green.**—STREET WORKS.—Works of private street improvements in (*a*) Grosvenor-road, section 2; (*b*) Palace Court-gardens; and (*c*) Vallance-road, section 2. Quantities from the Surveyor to the Council, Town Hall, Wood Green. Deposit, £1 1s.

OCTOBER 1.—**Hedon.**—WATER SUPPLY.—For the laying of the proposed water-service piping and other incidental works. Specifications of the Surveyor, Mr. H. Percival Binks, M.S.A., of 31, Scale-lane, Hull.

OCTOBER 2.—**Queenstown.**—SEWER.—Construction of outfall sewer, for the U.D.C. Specifications of Mr. J. H. Campbell, Town Clerk, Queenstown. Deposit, £5.

[Those with an asterisk (*) are advertised in this issue.]

ROADS, etc.—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

OCTOBER 7.—**Bradford.**—WATERWORKS.—For the following in connection with the Nidd Aqueduct:—(1) Duplication of seven pipe syphons, 7¾ miles in length, with valve, air, scour, manway, and hatchbox chambers, etc.; (2) supply of 7,500 tons of cast-iron pipes, 36 in. internal diameter, and 450 tons of special castings; (3) supply of 900 tons of mild steel pipes, 36 in. internal diameter, ⅜ in. thick, and ½ in. thick, in 8-ft., 16-ft., and 24-in. lengths. Quantities of Mr. James Watson, M.Inst.C.E., Waterworks Engineer, Town Hall, Bradford. Deposit, £5 5s. for No. 1 contract, and £2 2s. each for Nos. 2 and 3.

OCTOBER 8.—**Colwyn Bay.**—REFUSE DESTRUCTOR. Erection of a refuse destructor, with steam boiler, auxiliary machinery, etc., complete, for the Colwyn Bay and Colwyn U.D.C. Specification from the consulting engineer, Mr. E. M. Lacey, M.Inst.C.E., 12, Victoria-street, Westminster, S.W. Deposit, £5 5s.

OCTOBER 9.—**Spain.**—PAVING.—The Municipality of Barcelona invite tenders for carrying out street paving works, estimated to cost about £25,500. A copy of the *Gaceta de Madrid*, containing particulars, may be seen at the Commercial Intelligence Branch of the Board of Trade, 73, Basinghall-street, E.C.

NO DATE.—**Egypt.**—WATER SUPPLY.—The Egyptian Ministry of the Interior invite tenders for the installation of a drinking water system at Mattaria-Manzala. Copies of plans on payment of 250 piastres (£2 11s.) from the Section des Municipalities et Commissions Locales, Ministère de l'Intérieur, Cairo.

Public Appointment.

* NO DATE. — CLERK OF WORKS. — The Fleet U.D.C. has deferred consideration of the above appointment *pro tem.*

NO DATE.—BUILDING FOREMAN.—The Nigerian Government invite applications for the above post. Salary, £250, free quarters, etc.

Auction Sale.

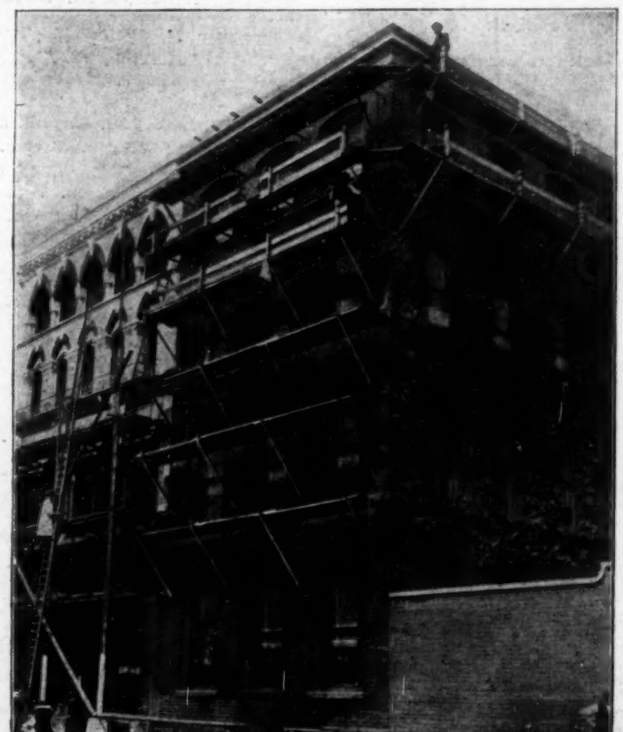
* SEPTEMBER 30.—Messrs. Churchill & Sim will sell by auction, at the Great Hall, Winchester House, Old Broad-street, E.C., an assortment of deals, battens, boards, timbers, etc.

[Those with an asterisk (*) are advertised in this issue.]

THE HUMPHRIES PATENT BRACKET SCAFFOLD.

THIS illustration shows Humphries' method of scaffolding for repair work to brick buildings. The illustration shows two buildings under repair next door to one another, one with scaffold poles, cords, and putlogs, and the other with Humphries' patent brackets. From the point of view of the architect, the property owner, or lessee, the non-interference with the use of the building, the non-interference with pavement or with the light and access to the building will be appreciated. There being no putlog holes to cut, there will be no bats of a different colour to patch the building on completion. The brackets take, on the average, ten minutes each to erect; the usual spacing is about 5 ft. 6 in.; therefore one man can erect 33 ft. run per hour. It does not matter to him whether it is 10 ft. from the ground or 50 ft. up in the air, except for the extra time involved in going up and down the ladder to fix his brackets. The brackets fold up, and twenty of them would occupy about the same space as a couple of bricklayers' hods. Twenty sets can be carried on a hand-cart—sufficient for 200 ft. run of scaffold. In the case of country jobs the cost of carriage works out at about one-fifth that of poles and cords.

We understand from the contractors, the Humphries Patent Bracket and Scaffold Syndicate, Ltd., Osier Works, Point Pleasant, Wandsworth, S.W., that the scaffold shown on this building only took two men the best part of a day to erect and set up, so that the total bill of delivery, erection, striking, and carting away would be 15s. to 20s.



The Humphries Patent Bracket Scaffold.

GERMAN FIRMS AND GERMAN ASPHALT.

WE have received from Messrs. Thomas Faldo & Co., Ltd., asphalt manufacturers and contractors, of Effingham House, 1, Arundel-street, Strand, W.C., an interesting letter in reference to correspondence on this subject. In the course of their remarks the firm say:—

"The exceedingly patriotic letters from some of the makers of materials for rendering concrete waterproof run very close to cheap advertisement and self-glorification. One might easily be led to believe that all asphalt is made in Germany. They seem quite oblivious of the fact that not only is the best description of this material imported from the country of our great ally, France (also from Italy, Sicily, and Switzerland), but is also manufactured in England by British firms with British capital (this is a most important point). As no natural asphalt is obtainable in this country, manufacturers are bound to import the raw material, and whilst a certain amount comes from Germany it gives very different results if properly manufactured in this country to that which is imported in blocks (or mastic form), which are often falsely stamped and generally of very inferior quality. This material consequently fails, thus giving to patentees and contractors for various substitutes a chance for which they ought to be truly thankful.

We all want to live and increase our businesses, but do let us be fair and not work on the principle, especially at such time as this, that the man who "shouts loudest gets heard most."

W. FALDO
(Managing Director of
Thomas Faldo & Co., Ltd.)."

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the prepaid rate of 18s. per annum, with delivery by *Friday Morning's Post* in London and its suburbs.

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Remittances (payable to THE BUILDER LTD.) should be addressed to 4, Catherine-street, Aldwych, London W.C.

PRICES CURRENT OF MATERIALS.

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the highest or lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£ s. d.
Best Stocks	1 16 6
Picked Stocks for Facings	2 10 0

Per 1000, Delivered at Railway Depôt.	£ s. d.		£ s. d.
Flettons	1 14 0	Best Blue Pressed Staffordshire	3 15 0
Best Fareham Red	3 12 0	Do. Bullnose	4 0 0
Best Red Pressed Ruabon Facing	5 0 0	Best Stourbridge Fire Bricks	4 0 0

GLAZED BRICKS—					
Best White, Ivory, and Salt Glazed Stretchers	13	0	0	Double Headers One Side and two Ends	15 10 0 19 10 0
Headers	12	10	0		
Quoins, Bullnose and 4½ in. Flats	16	10	0	Two Sides and one End Splays and Squints	20 10 0 18 0 0
D'ble Str'tch'rs	18	10	0		

Second Quality £1 10s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	7 3	per yard, delivered.
Thames Ballast	5 9	" "
Best Portland Cement	37 0	per ton, "
Best Ground Blue Lias Lime	20 0	"

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	14s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks	27s. 0d. per ton, at rly. dpt.

STONE.

Per Ft. Cube.	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 7½
Do. do. delivered on road waggons, Nine Elms Depôt	1 9½
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 4½
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 8½

Per Ft. Cube, delivered at Railway Depôt.	s. d.		s. d.
Ancaster in blocks	1 10	Closeburn Red Freestone	2 0
Beer in blocks	1 6	Red Mansfield Freestone	2 4
Greenshill in blocks	1 10	Talacre & Gwespyr Stone	2 4
Darley Dale in blocks	2 4		
Red Corsehill in blocks	2 3		

STONE (*Continued*).

YORK STONE—*Robin Hood Quality.*

	£	s.	d.
Per Ft. Cube, Delivered at Railway Depôt.			
Scappled random blocks	2	10	
Per Ft. Super., Delivered at Railway Depôt.			
4 in. sawn two sides landings to sizes (under 40 ft. super.)		2	8
4 in. rubbed two sides ditto, ditto		2	6
4 in. sawn two sides slabs (random sizes)		0	11½
3 in. sawn two sides slabs (random sizes)		0	7
2½ in. to 2½ in. sawn one side slabs (random sizes)		0	6
1½ in. to 2 in. ditto, ditto			

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.			
Scappled random blocks	3	0	
Per Ft. Super., Delivered at Railway Depôt.			
4 in. sawn two sides landing to sizes (under 40 ft. super.)		2	8
6 in. rubbed two sides ditto		3	0
3 in. sawn two sides slabs (random sizes)		1	2
2 in. self-faced random flags		0	5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£	s.	d.	In. In.	£	s.	d.
20 x 10 best blue Bangor	13	2	6	20 x 10 best Eureka unfading green	15	17	6
20 x 12 ditto	13	17	6	20 x 12 ditto	18	7	6
20 x 10 1st q'lity ditto	13	0	0	18 x 10 ditto	13	5	0
20 x 12 ditto	13	15	0	16 x 8 ditto	10	5	0
16 x 8 ditto	7	5	0	20 x 10 permanent green	12	12	6
22 x 10 best blue Portmadoc	12	12	6	18 x 10 ditto	10	12	6
16 x 8 ditto	6	12	6	16 x 8 ditto	7	12	6

TILES.

At Railway Depôt.

	s.	d.		s.	d.
Best plain red roofing (per 1000)	42	0	Best "Hartshill" brand, plain sand-faced (per 1000)	45	0
Hip and Valley (per doz.)	3	7	Do. pressed (per 1000)	42	6
Best Broseley (per 1000)	50	0	Do. Ornamental (per 1000)	47	6
Do. Ornamental (per 1000)	52	6	Hip (per doz.)	4	0
Hip and Valley (per doz.)	4	0	Valley (per doz)	3	6
Best Ruabon red, brown, or brindle (Edw'ds)(pr1000)	57	6	Staffords. (Hanley) Reds or Brindled (per 1000)	42	6
Do. Ornamental (per 1000)	60	0	Hand-made sand-faced (per 1000)	45	0
Hip (per doz.)	4	0	Hip (per doz.)	4	0
Valley (per doz)	3	0	Valley (per doz)	3	6

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	17	5	0	18	15	0
Deals: best 3 in. by 9 in.	17	5	0	18	5	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	14	12	6	15	12	6
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best		
Battens: seconds	0	10	0	"	"	
2 in. by 4 in. and 2 in. by 6 in.	13	5	0	14	5	0
2 in. by 4½ in. and 2 in. by 5 in.	12	2	6	13	2	6
Foreign Sawn Boards—1 in. and 1½ in. by 7 in.	0	10	0	more than battens.		
½ in.	1	0	0	"		
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 6	0	0	7	5	0
Seconds	5	7	6	6	17	6
Small timber (8 in. to 10 in.)	4	12	6	4	17	6
Small timber (6 in. to 8 in.)	3	17	6	4	5	0
Swedish balks	3	5	0	3	12	6
Pitch-pine timber (30 ft. average)	7	10	0	8	10	0

JOINERS' WOOD.	At per standard. £	s.	d.	£	s.	d.
White Sea: first yellow deals, 3 in. by 11 in.	29	15	0	31	0	0
3 in. by 9 in.	27	12	6	29	0	0
Battens, 2½ in. and 3 in. by 7 in.	21	5	0	22	5	0
Second yellow deals, 3 in. by 11 in.	24	15	0	25	15	0
Do. 3 in. by 9 in.	23	0	0	24	0	0
Battens, 2½ in. and 3 in. by 7 in.	17	5	0	18	5	0
Third yellow deals, 3 in. by 11 in. and 9 in.	18	5	0	19	5	0
Battens, 2½ in. and 3 in. by 7 in.	16	0	0	17	0	0
Petersburg: first yellow deals, 3 in. by 11 in.	26	10	0	27	10	0
Do. 3 in. by 9 in.	23	0	0	24	0	0
Battens	17	5	0	18	5	0
Second yellow deals, 3 in. by 11 in.	19	5	0	20	5	0
Do. 3 in. by 9 in.	18	7	6	19	7	6
Battens	—			—		
Third yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	15	10	0	16	10	0
Battens	13	5	0	14	5	0
White Sea and Petersburg—First white deals, 3 in. by 11 in.	19	5	0	20	5	0
First white deals, 3 in. by 9 in.	17	2	6	18	2	6
Battens	15	0	0	15	10	0
Second white deals, 3 in. by 11 in.	17	2	6	18	2	6
Second white deals, 3 in. by 9 in.	15	0	0	16	0	0
Battens	13	15	0	14	5	0
Pitch-pine: deals	30	15	0	32	15	0
Under 2 in. thick extra	0	10	0	1	0	0

WOOD (*Continued*).

JOINERS' WOOD (*Continued*)—	At per standard. £	s.	d.	£	s.	d.
Columbian or Oregon Pine, best quality	26	0	0	28	0	0
Yellow Pine—First, regular sizes	54	0	0	upwards.		
Oddments	37	0	0	"		
Seconds, regular sizes	38	10	0	"		
Oddments	23	0	0	"		
Kauri Pine—Planks per ft. cube	0	6	6	0	7	6
Danzig and Stettin Oak Logs—Large, per ft. cube	0	4	0	0	5	0
Small " "	0	3	6	0	4	0
Wainscot Oak Logs, per ft. cube	0	9	6	0	11	0
Dry Wainscot Oak, per ft. super. as inch	0	0	11	0	1	3
½ in. do. do.	0	0	10	0	0	11
Dry Mahogany — Honduras, Tabasco, per ft. super. as inch	0	0	11	0	1	4
Selected, Figury, per ft. super. as inch	0	1	6	0	2	6
Cuba Mahogany	0	1	6	0	2	0
Dry Walnut, American, per ft. super. as inch	0	0	11	upwards. 0	1	3
French, "Italian," Walnut	0	0	11	0	1	6
Teak, per load (Rangoon or Moulmein)	28	0	0	34	0	0
Do., do. (Java)	24	0	0	27	0	0
American Whitewood planks, per ft. cube	0	6	6	0	7	6
Prepared Flooring, etc.—	Per square.					
1 in. by 7 in. yellow, planed and shot	0	15	6	0	18	0
1 in. by 7 in. yellow, planed and matched	0	16	0	0	19	0
1¼ in. by 7 in. yellow, planed and matched	0	18	6	1	3	0
1 in. by 7 in. white, planed and shot	0	15	0	0	17	0
1 in. by 7 in. white, planed and matched	0	15	6	0	17	6
1¼ in. by 7 in. white, planed and matched	0	17	6	0	19	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed boards	0	13	6	0	16	0
1 in. by 7 in. " "	0	16	0	0	19	6
¾ in. by 7 in. white " "	0	13	0	0	15	0
1 in. by 7 in. " "	0	15	6	0	16	6

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London or delivered Railway Vans, per ton. £	s.	d.	£	s.	d.
Rolled Steel Joists, ordinary sections	9	10	0	10	10	0
Compound Girders, ordinary sections	12	0	0	13	0	0
Steel Compound Stanchions	13	0	0	15	0	0
Angles, Tees, and Channels, ordinary sections	12	0	0	13	0	0
Flitch Plates	12	0	0	13	0	0
Cast Iron Columns & Stanchions, including ordinary patterns	9	0	0	10	0	0

METALS.

	Per ton, in London. £	s.	d.	£	s.	d.
IRON—Common Bars	9	10	0	10	0	0
Staffordshire Crown Bars, good merchant quality	9	15	0	10	5	0
Staffordshire "Marked Bars"	11	10	0	—		
Mild Steel Bars	9	15	0	10	5	0
Hoop Iron, basis price	10	10	0	—		
" " Galvanised	19	0	0	—		

(* And upwards, according to size and gauge.)

Sheet Iron Black—Ordinary sizes to 20 g.	10	15	0	—		
" " 24 g.	11	15	0	—		
" " 26 g.	13	5	0	—		
Sheet Iron, Galvanised, flat, ordinary quality—Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	17	0	0	—		
Ordinary sizes to 22 g. and 24 g.	17	10	0	—		
Ordinary sizes to 26 g.	18	10	0	—		
Sheet Iron, Galvanised, flat, best quality—Ordinary sizes to 20 g.	20	0	0	—		
" " 22 g. and 24 g.	20	10	0	—		
Ordinary sizes to 26 g.	22	0	0	—		
Galvanised Corrugated Sheets—Ordinary sizes, 6 ft. to 8 ft. 20 g.	16	10	0	—		
Ordinary sizes, 22 g. and 24 g.	16	15	0	—		
Ordinary sizes, 26 g.	18	5	0	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	13	10	0	—		
Best Soft Steel Sheets, 22 g. & 24 g.	14	10	0	—		
Best Soft Steel Sheets, 26 g.	16	10	0	—		
Cut Nails, 3 in. to 6 in. (Under 3 in., usual trade extras.)	11	10	0	12	0	0

LEAD, &c.

	Delivered in London. £	s.	d.			
LEAD—Sheet, English, 4 lb. and up	25	0	0	—		
Pipe in coils	25	10	0	—		
Soil pipe	28	10	0	—		
Compo pipe	28	10	0	—		
ZINC—	In casks of 10 cwt.					
Sheet—	50	0	0	—		
COPPER—						
Strong Sheet per lb.	0	1	2	—		
Thin " "	0	1	3	—		
Copper nails "	0	1	2	—		
Copper wire "	0	1	2	—		
BRASS—						
Strong Sheet "	0	1	2	—		
Thin "	0	1	3	—		
TIN—English Ingots "	0	1	7	—		
SOLDER—Plumbers' "	0	0	9	—		
Tinmen's "	0	1	0	—		
Blowpipe "	0	1	3	—		

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

15 oz. thirds	3d.	26 oz. fourths	4½d
" fourths	2½d.	32 oz. thirds	6½d.
21 oz. thirds	4½d.	" fourths	5½d.
" fourths	3½d.	Fluted Sheet, 15 oz.	4d.
26 oz. thirds	4½d.	" 21 oz.	5d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft. Delivered.

¼ Rolled plate	2½d.
⅛ Rough rolled and rough cast plate	3d.
¼ Rough rolled and rough cast plate	3½d.
Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffed, and Rolled Cathedral, white	3½d.
Ditto, tinted	5½d.

* Not less than two crates.

OILS, &c.		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	2	5
" " " in barrels	"	0	2	6
" " " in drums	"	0	2	8
Boiled " " in barrels	"	0	2	9
" " " in drums	"	0	2	10
Turpentine in barrels	"	0	2	10
" in drums	"	0	3	1
Genuine Ground English White Lead, per ton (in not less than 5 cwt. casks.)		33	15	0
Red Lead, Dry	per ton	31	10	0
Best Linseed Oil Putty	per cwt.	0	10	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	9
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	10	0
Finest Pale Durable Copal	0	18	6
Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Pale Enamel	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	0
Best Black Japan	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	6
French and Brush Polish	0	10	0

[Owing to the exceptional circumstances which prevail at the present time, prices of materials should be confirmed by inquiry.]

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to THE BUILDER LTD., and *not* to the Editor.

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N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 6 p.m. *on Wednesday.* [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.* unless in some exceptional cases and for special reasons.]

* Denotes *accepted.* † Denotes *provisionally accepted.*

ASHFORD.—For sewage works, for the Managers of the West London District Schools, Ashford:—

S. Kavanagh & Co., Surbiton-hill, S.W.* £2,480 9 11
Gaze & Sons, Ltd. 2,290 0 0

BEDFORD.—For the erection of six cottages for the working-classes, for the Rural District Council. Mr. F. R. Chapman, Sanitary Inspector, Bedford:—

Twelve tenders; highest, £1,184.
F. Pryor & Co., Newnham-avenue, Bedford* £1,017

BOLTON.—For painting, etc., of the cottage homes, for the Board of Guardians:—
Bromley & Cook, Bolton* £325 18

BOSTON.—Alterations at cottage home and at the workhouse, for the Board of Guardians:—
J. Leafe & Son ..... { £90 for home and £132 10s. for workhouse.

BRAINTREE.—For supply of 700 tons of granite to the Urban District Council:—
C. Abells, Ltd.,* at from 12s. to 13s. 3d. per ton.

CAMBRIDGE.—Erection of children's home, for the Board of Guardians:—
J. Brignell* £998 10

CASTLE CARY.—For erection of a pair of cottages at Dimmer Farm, for the owners. Mr. J. H. Francis, architect, 41, Queen's-road, Gosport. Quantities by the architect:—

D. R. Dunthorn	£499 6 8	Martin & Moody	£438 14 0
Danbury & Hill	454 11 10	L. R. Francis, Castle Cary*	418 8 7
T. Lydford	448 15 5		
C. Thomas & Sons	443 19 11		

CHERTSEY.—Sewerage works at Byfleet, etc., for the Chertsey Rural District Council:—

A. Streeter & Co.	£3,220 17 2
F. & H. F. Higgs	2,840 0 0
J. J. Shardlow	2,695 0 0
Hardy & Co., Woking, Surrey*	2,479 0 0

CHIPPING NORTON.—As stated in last week's *Builder*, the tender of Messrs. Rowell & Sons, Chipping Norton, was provisionally accepted by the Corporation, for the construction of the proposed sewage scheme. At a subsequent meeting of the Corporation, Messrs. Rowell & Son asked for an advance of £300 in consequence of the rise in the cost of material. This would bring the tender up to £9,480, as against the next lowest tender of £9,400. The Corporation have adjourned the question and will consult the Local Government Board.

CHISWICK.—For temporary rifle range at the Chiswick Urban District Council's river depôt. Mr. Edward Willis, A.M.I.C.E., etc., Hon. Surveyor, Engineer and Surveyor's Office, Town Hall, Chiswick, W:—

J. & J. F. Pallant	£164 10 0	H. Fowler	£133 2 6
L. L. Leeder & Co.	157 17 0	R. Blackburn*	112 0 0
Nichols Bros.	141 0 0		

COLCHESTER.—Wood-paving works in three streets, for the Corporation:—
Acme Flooring & Paving Co., Ltd.* £7,866

CROYDON.—For alterations and additions at Princess-road Council School, for the Education Committee. Mr. H. Carter Pegg, F.R.I.B.A., Alnwick House, Thornton Heath. Quantities by Mr. W. J. Falkner, St. Paul's-chambers, 23, Ludgate-hill, E.C.:—
H. & H. F. Higgs, Station Works, Hinton-road, Herne Hill, S.E.* £10,933

CROYDON.—For the erection of a Council school proposed to be erected in Tamworth-road, for the Local Education Authority. Mr. H. Carter Pegg, architect, Thornton Heath. Quantities by Mr. W. J. Falkner, St. Paul's-chambers, Ludgate-hill, E.C.:—
H. & H. F. Higgs, Station Works, Hinton-road, Herne Hill, S.E.* £10,930

EVESHAM.—For the erection of sixteen cottages at Harrington, for the Evesham and Pebworth Rural District Council:—

G. Sorrill	£3,500	W. Drew	£3,300
Steward & Co.	3,410	J. Knox	3,150
H. W. Crisp	3,399	W. Cooper	3,125
Cliff & Co.	3,350	Espley & Co., Ltd., Evesham*	3,089
W. White	3,335		

EVESHAM.—For the erection of twenty cottages at Bretforton, for the Evesham and Pebworth Rural District Council:—

G. Sorrill	£4,099	Steward & Co.	£4,010
W. White	4,020	Espley & Co., Ltd.	3,952
Cliff & Co.	4,018	W. Cooper	3,950
H. W. Crisp	4,015	J. Knox, Evesham*	3,849

EVESHAM.—For the erection of ten cottages at Cow Honeybourne, for the Evesham and Pebworth Rural District Council:—

Steward & Co.	£2,050 0 0	Cliff & Co.	£1,950 0 0
G. Sorrill	2,010 0 0	W. Cooper	1,895 0 0
H. W. Crisp	1,990 0 0	W. Drew	1,799 0 0
Espley & Co., Ltd.	1,990 0 0	Matthews & Mullis, Stratford-on-Avon*	1,735 19 9
J. Knox	1,980 0 0		

FOREHOE.—Erection of six cottages at Costessey, for the Forehoe Rural District Council:—
A. E. Palmer* £1,097

FROME.—For installation of suction gas plant at the waterworks, for the Urban District Council:—
J. Simpson & Co., London* £1,182

GREAT YARMOUTH.—Erection of Newtown School, for the Town Council:—
J. D Harman* £11,700

KEIGHLEY.—For erection of new Morton Cemetery, for the Keighley Rural District Council:—

Mason's Work (Mortuary Chapel).
T. Moore, Keighley* £338 17 6
Drainage of Cemetery.
W. Baker, Keighley* 141 4 1½
Joiner's Work (Mortuary Chapel).
J. W. Taylor, Morton* 125 4 8
Slater's Work.
W. Thornton, Bingley* 30 0 0
Gates and Railings.
W. Longbottom, Bingley* 36 13 0
Plumber's Work.
H. Midgley, Keighley* 95 6 10
Plasterer's Work.
P. Davey, Cross Hills* 23 9 0

NEWPORT (Monmouthshire).—Widening Llanarkroad, for the County Council:—

A. H. Williams	£977 7 4	A. S. Morgan	£825 4 6
Foster & Hill	963 0 0	J. H. Monks	777 12 9
J. H. Williams	949 0 0	H. Smith, Arcade-chambers*	770 0 0
Hatherley & Co.	947 0 0		

KENILWORTH.—For erection of twenty-four cottages in St. John-street, for the Urban District Council. Mr. Sholto Douglas, Architect, Council Offices, Kenilworth:—

	Per house.
B. P. Gatherco'e	£204 10 0
Nixon & Sons	185 0 0
Yousll & Brooks	174 0 0
J. H. Laurance, Kenilworth‡	174 0 0
A. J. Satchwell, Kenilworth‖	173 6 8
J. Barker, Kenilworth‖	173 6 8
H. W. Laurance, Kenilworth§	166 12 1

[Surveyor's estimate, £173 10s.]
‡ Accepted for eight houses. ‖ Accepted for six houses.
§ Accepted for four houses.

NEWTON-IN-MAKERFIELD.—For driving headings in connection with the waterworks, for the Urban District Council:—
Bennie & Thompson, Warrington* £2,354 0 6

ST. AUSTELL.—For erection of home at Tregonissey, for the St. Austell Board of Guardians:—

F. J. Stanbury	£789	J. H. Lobb, Merasgissey*	£581
Knott & Andrew	780		
J. Paynter	710		

THIRSK.—Erection of storehouse, etc., at the Isolation Hospital, for the Rural District Council:—
R. Stephenson* £162 19 6

WILLINGTON.—For additions to the sewage-disposal works, for the Urban District Council:—
Walton Bros., Brook* £234 10

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